COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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Miners' Earnings and Economic Conditions

ILLINOIS is setting a splendid example of preparedness. The operators in that state have for months been assiduously collecting data covering their local industry—data of a character to satisfy the most exacting and calculated to answer the charge of the union that governmental intervention is essential to bring out the facts.

The edition of the pamphlet "Coal—A Few Things the Public Wants to Know," issued by the Illinois Operators Association several weeks ago, has already passed the 165,000 mark and is still in demand. Although largely confined to local conditions, much that is written in that booklet applies with equal force to all bituminous coal operation, and the dissemination of these pertinent facts cannot otherwise than help understanding of the situation generally.

Another such pamphlet is due off the press this week. We predict that it will be another best seller. This second pamphlet covers in detail in turn the earnings of all men employed at a thoroughly representative group of Illinois mines for both 1920 and 1921, classified between tonnage and day workers. These figures show, for instance, that the average earnings in 1921 of all employees was $865.06 and that 49 per cent of the total employees received 83 per cent of earnings, because they worked more days. The average hourly earnings of tonnage men was $1.26 in 1921; of daymen, 95c. Classifying earnings by groups, according to time worked, this report shows how the steady workers—those putting in 75 per cent or more as many days as opportunity offered—had annual incomes in 1921 ranging from $1,200 to $1,800.

It is pertinent to point out here that it is the rate of income of the relatively large group that perform consistently that indicates the adequacy of the wage rate.

To base conclusions on a general average that is lowered by the floater and indifferent employee is unfair both to worker and to employer. The public cannot be expected to support by high prices for coal a surplus of labor in the coal mines. It is pointed out in this pamphlet, for instance, that, "taking all the mines in the State of Illinois as a whole, it has been necessary during the past two years to hire throughout the period of each year approximately 60 per cent more men than the maximum number ever working in the mines on any given day."

Earnings in the coal mines of Illinois are compared with those in other large industries and on the railroads. Railroad workers' earnings are shown to be but 53.5 per cent and in 23 other industries they were but 47.3 per cent of those in the coal mines.

A striking exhibit in the booklet is a comparison of coal-mine rates in Illinois with those paid in districts competitive with Illinois. As these other fields are mainly non-union, the comparison permits the conclusion that "Illinois miners are not in conflict with Illinois operators but with an economic condition."

The pamphlet is thoroughly worth while. It is of a kind to interest and instruct the serious-minded layman who all over the country is saying "What is it all about? Where in this maze of charge and countercharge can I find out the facts?" Large masses are not swayed by reading such an array of cold facts, but solid citizenry is instructed and a background of constructive, well-placed opinion is built up by the distribution of such literature.

The Mismanaged, Inefficient Industry

SENATOR BORAH voiced the impatient protest of an uninformed public when last Saturday he said, as quoted in the press, that unless the coal industry cleans house and is reorganized in the interest of the public, government control or ownership or some other dire thing will happen. Where Senator Borah comes from about the only coal found is that which falls from the Oregon Short Line trains as they roll over the Snake River plains.

The Senator is more nearly right than he realizes. Perhaps the industry knows it too. Mine owners and operators see no immediate possibility of government ownership of the coal mines but they do sense an undercurrent of sentiment for government regulation. The miners have the same vision but with different hopes. The operators—capital, if you will—do not want the government to lay its blighting hand on their business; they know that they can conduct it more efficiently than can a federal bureau. In this the managers of coal mines are no differently disposed than men in all other lines of industry and business. As the New York *Times* puts it editorially, "To speak with a straight face of government operation as a means of eliminating waste and extravagance must be hard for Mr. Borah or anybody else. Look at the figures of the government's balance sheet in the shipping business. Consider the lavish operation of the railroads by the government."

Does the Senator and others who think as he does know that one of the issues at stake in the present conflict involves the endeavor of the miners to perpetuate and extend practices that promote inefficiency and prevent good management? A machine shop that maintained a separate bench for each worker and permitted the workers to come and go as they pleased, permitted them to absent themselves for two days in succession without necessity or formality of excuse and held idle the investment in plant that absence involved, would properly be challenged as mismanaged and inefficient. Yet that is a characteristic of the union coal mines. The coal miner is the freest workman on earth. He is

a contractor, he punches no time clock and permits no record of his comings and goings. He enters the mine when he likes and leaves when he deems prudent. His working place—his "room"—is his. Two days' absence without excuse are not penalized. One of the demands of the union this year is that the automatic penalty of a dollar per day for absence beyond two days be removed, as it was before the war.

Outside of coal, the general practice of management is to discharge or furlough workers not needed when demand for its product falls off. From the standpoint of management it is more efficient operation to decrease the force than to run part time with a full crew. The railroads last year effected economies by laying off thousands of men not needed. Factory hands by the thousands were discharged. But every coal operator who could get orders to run his mine even a few days per month gave his men—all his men—the opportunity to share in what business there was. In no other large industry does this humane but inefficient practice obtain.

The union bituminous coal mines in 1921 probably did not average half-time operation—that is, they worked less than an average of four out of eight hours per day. Had the management discharged the less efficient and energetic half of the working force or closed the less efficient mines and then kept the remaining mines going full tilt all day every day, as much coal would have been produced and the cost per ton would have been less. Part-time operation always increases unit cost. But once a union miner or mine worker becomes attached to a payroll the union protects him against discharge.

If Senator Borah will pursue his study diligently he will find that the check-off is the greatest bar to good management in the bituminous coal industry, and he will find that the operators have declared for its rejection in future contracts.

We must ask, however, what in the public interest determines whether the coal industry is efficient or otherwise. Until thrown out of joint by the war and in turn by post-war adjustment, even as now, the bituminous-coal industry gave the United States all the coal it required and it was the cheapest coal in the world. The mine workers produced, and even yet produce, more tons per man per day and per year than in any other important country. The percentage of machine-mined coal in the United States is exceeded nowhere.

The faults which are blazoned on high—intermittency of operation, high wage rates, union domination, penchant for car shortages, overdevelopment and others—are the result of the rapid growth under highly competitive conditions of a wholly disintegrated business composed of provincial, widely scattered units. The remedy of nationalization proposed by the United Mine Workers promises no cure for these basic faults. There can be no effective remedy that does not contemplate the prompt squeezing out of the mass the inefficient mines, which means less workers and fewer operators. If there are, as estimated, 150,000 more mine workers than are necessary for proper functioning, they must go, as must many high-cost mines.

What governmental agency would take such a step? Taking the overcapacity out of the soft-coal industry is a job for management, not for politicians. To seek its accomplishment is the task of the industry, not government. It is the task to which the industry should have its face definitely set.

During the Idle Period Prepare for Resumption

HOW many times during the past year has the state of the mine roads troubled the superintendent—the heavy grades, the crooked, narrow, and even low places, the swags that filled with water, the track that bogged under heavy loads, the roof that was always falling or having to be barred down for safety? Every time that anything other than a temporary correction of these faults was considered it was necessary to put the work off until some time when a definite period of idleness of adequate length made it certain that each portion of the work started could be finished before the mine would have to run again. The length of idle time being uncertain, no large changes could be made, or if they were, they had to be made piece-meal instead of being attacked on a big scale with a loading machine and every facility for cheap work.

Now the time has come when an opportunity is afforded for doing just such work properly and yet at minimum expense. The work so long delayed can now be started with a certainty of being carried out without interruption until it is completed. Transportation always must be difficult if the roads over which it is conducted are uneven and crooked. Now is the time to correct such irregularities, for the roads are now clear for the transport of rock and refuse. A rock face can be created in the roadway without fear that it still will be there when the whistle is blown for resumption. The roof can be blown down without risk that the fall of rock will be in the way of tomorrow's work. Cement and sand can be hauled in without apprehension that it and the machinery for its implacement will interfere with transportation.

Crosscuts can be cleared of road cleanings, and the leaking brattices can be cemented tight, thus lessening air losses. The airways should be cleared of fallen rock and cemented if necessary. Sharp right-angled turns in airways passing large quantities of air should be rounded, or places with easier turns driven. Cribs should be placed where supports are weakened, and every effort should be made to guide the air in the direction planned for it. Where much air passes, the sides and roof should be cemented.

When these losses of air are overcome and these frictional losses are lessened, the speed of the fan or its water gage can be lowered without decreasing the dilution of methane at the face and without any reduction in the quantity of air provided for sweeping the faces free of powder smoke and lamp fumes. No brattice that lies behind a pile of rock and road cleanings can be inspected and repaired, and without inspection and repair it cannot be kept tight.

At no time is it more necessary than during a strike or any idle period to demand reports, to plot records and to calculate results. The number of cars loaded should be recorded, the number of cubic yards to be removed calculated or if the roof is to be cemented the area gunited each day should be known and the progress tabulated.

A strike is a time of a lowering of morale. Most of the men are not working. Care must be taken to see that those who are supposed to be at work are not merely on the payroll but actively engaged and that they are not straggling home before the time appointed. The boss of the gang should be continuously on the job both for safety and for superintendence.

Lining a Shaft in Sixty-Foot Sections, Starting from Near the Top Downward, Greatly Reduces Cost

At Leisenring No. 1 Airshaft Concrete Was Machine-Mixed on the Surface, Lowered Into the Shaft and Poured in 60-Ft. Sections, Composed of 5-Ft. Segments, the First Section Beginning 120 Ft. from the Surface

By Alphonse F. Brosky,*
Pittsburgh, Pa

OPERATIONS at Leisenring No. 1 shaft of the H. C. Frick Coke Co. began back in the early eighties. The shaft is located in the coke region, three miles southwest of Connellsville, Pa. When the sinking was made the field, though not exactly in its infancy, had not been much mined, so that this operation was one of the pioneers in that locality.

Nor has mining at any time since been prosecuted intensively. The beehive ovens at no time have demanded nearly as much coal as the region could produce. As most of the mines in this field served a limited number of beehive ovens it is little wonder that their average life has been greater than that of mines in other fields. The thickness of the coal measure being worked also has been a factor in the longevity of these operations. The Pittsburgh bed attains in many places in this region a thickness of 9 ft.

An airshaft was sunk at Leisenring No. 1 several hundred yards south of the hoisting shaft, the thickness of the overburden exceeding 400 ft. At the time that this shaft was sunk the industry had not made extensive use of concrete, the real advances in the use of this material having been made within the last decade. What the cross-sectional dimensions of this airshaft were at the time of sinking cannot be judged by its measurements today. During the thirty-five or more years that have elapsed since the completion of this opening its sides have stood without a permanent supporting lining. At intervals during this period more or less timber has been placed, but timbering at its best does not assure that a shaft sunk through sedimentary measures will retain perfect alignment.

Water Difficulties in Upper Sixty Feet

The strata penetrated consist of shales, clays, sandstones, several extremely thin coal seams and some limestones. For the first 60 ft. downward from the surface, as shown in Figs. 3 and 4, shales preponderate, with occasional strata of other rocks at intervals. It was in this section that most of the troubles arose. Water flowed from the bedding planes of the strata in great quantity, and as it is practically impossible to prevent the air from circulating behind a wooden shaft lining, the soft formations underwent a more or less rapid disintegration. The water, acting as a transporting agent, removed the crumbled mineral, forming voids, and it was thus impossible to keep the shaft in line.

Below the 60-ft. level little water is found and the rocks are firmer. But at intervals softer strata such as clays and shales occur, and these required support. It was realized that the physical conditions in and about the shaft might finally reach such a state as to become hazardous. The timbering remained well preserved in the extremely wet atmosphere, but it would not "stay put." Weathering of the rock in the unprotected sections caused falls, so that the shaft walls became extremely irregular, and six years ago the upper 60-ft. section was retimbered.

A 20-ft. fan, operated as a blower, supplies air for mine ventilation. The shaft is, therefore, a downcast. Originally enough air traveled through this shaft to insure good ventilation. As the workings were being extended, however, the company foresaw the need of a greater air supply and determined to effect the desired result by lessening the resistance which the downcast offered to the passage of the ventilating current. It also was deemed advisable to shut off the water which found its way into this shaft, as the accumulation of ice in the winter appreciably obstructed the passage of air.

The lining of the shaft was therefore started in the summer of 1921 and was completed in November of the same year. No steel entered into this construction, concrete being used for the lining and wood for the stairway. Past experiences showed clearly the superiority of wood over steel for this purpose. Steel corrodes in a comparatively short time, whereas wood has been removed in a perfect state of preservation after as many as forty years of service.

The work of lining the shaft was done by the company, under the supervision of Stephen Brindlinger, who has had many years of experience in this kind of work and who has been in the company's employ for forty-three years. His wide experience had given him an intimate knowledge of the formations with which he had to deal. It is interesting to note the sequence of operations followed and the novel schemes employed in this

FIG. 1. VIEW OF WATER RING WITH WATER FALLING FROM TERRA-COTTA PIPES ABOVE

By keeping this water out of the shaft ice does not form in the winter months. The ring is sufficiently large that it can be entered and the pipes cleaned out should any become clogged.

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undertaking. That the work was well done is attested by the condition of the finished shaft as it stands today. The work unquestionably was dangerous, yet not a single accident occurred.

It might be well to describe first the surface operations, including the handling of materials, the bucket arrangement and the like. While the lining was being constructed the fan was kept running continuously in order to maintain the ventilation of the mine. A double trap door was set in the roof of the fan casing directly over the center of the shaft proper, around which a platform was erected. This served as a landing for the bucket when brought to the surface. In a temporary hoist house, about 50 ft. from the shaft, a steam-driven Lambert friction hoist of the two-drum reversible type was placed.

The drums of this machine carried ¾-in. non-spinning steel cable. To the cable from one drum was attached the bucket and a swinging platform was suspended from the other cable. A spool, or "nigger-head," was fastened to the main shaft of this machine and was used for pulling 3-ton supply cars up a narrow-gage track from the railroad siding.

The trap door on the roof of the casing was opened only when material was raised from or lowered into the shaft. None of the concrete, however, passed through this opening, as will be seen later. In straightening the walls of the shaft much protruding rock was shot down. This fell onto the working platform, was loaded into the bucket and lifted to the surface through the door. Here the bucket was swung over the outside platform and the rock dumped into a chute leading to a rock pile, or, in case the removed material was not suitable for backfilling between the shaft lining and the wall rock, it was loaded into wagons and hauled away. The working platform mentioned was of the grate type, with a ratio of open space to solid sufficiently large to permit the passage of enough air for mine ventilation.

A concrete mixer was located close to the fan housing. A gated chute pierced the foundation wall of the fan casing, connecting the mixer with the shaft landing inside. This landing afforded ample working space for the loading of concrete. The bucket, on being raised to this point, was swung over the landing and under the discharge of the chute. The gate was then opened and the bucket filled.

The cable carrying the bucket passed over the sheave of a boom extending over the trap door, and that leading to the swinging platform pierced the foundation wall and passed down the shaft to one side of the bucket cable. Four corner ropes attached this cable to the platform which was used solely for cutting hitchings in the shaft lining to receive the wooden beams which support the stairs.

As mentioned before, the first 60 ft. of the shaft had been timbered some years ago. Thus the most dangerous section, being near the surface and water bearing, was well supported. Concrete lining in a shaft usually is started at the bottom. In deep shafts, however, this practice results in much lost time occasioned by raising and lowering men to and from the surface while blasting. In lining this shaft, work did not commence at its foot but at a point 120 ft. from the surface. The lining was carried up to the section that was lined already with wood, and then stopped.

Upon completion of this portion of the shaft, construction of the stairway began at the 120-ft. elevation

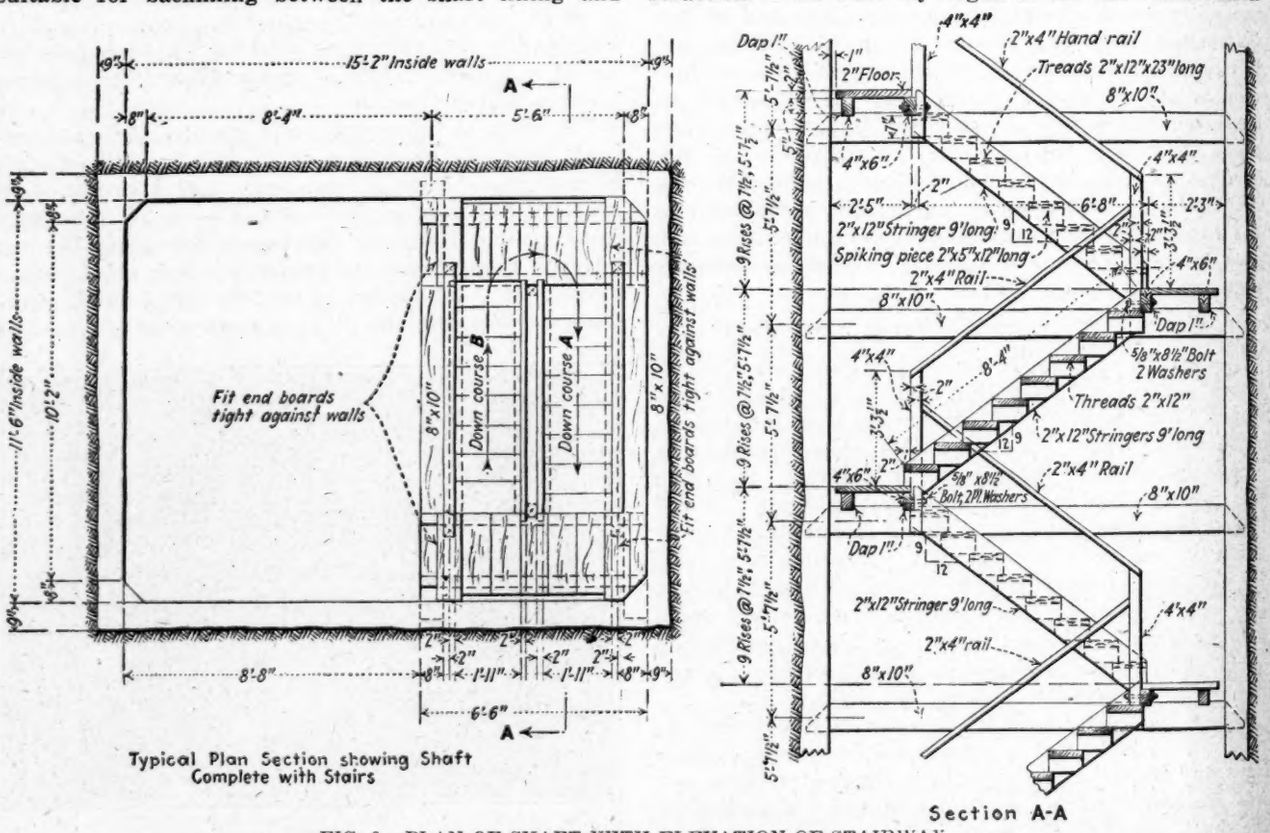


FIG. 2. PLAN OF SHAFT WITH ELEVATION OF STAIRWAY

This shaft is lined with concrete without the use of reinforcement, and the stairway is of wood. The air in the shaft is downcast and, therefore, free from fungus germs. The purpose of the lining in the main ring is not for strength but to preserve the measures against deterioration and to keep the shaft dry. The measures have stood fairly well for years without protection except in the first 60-ft. section.

and was carried upward. Immediately after the concrete lining was completed up to the lower end of the wooden lining, 60 ft. from the surface, concreting was started at a point approximately 180 ft. below the ground level.

The schedule followed then was to finish the lining of one 60-ft. section, working upward, and then start another 60 ft. below the completed one. This procedure continued until the entire shaft had been lined. The upper 60-ft. section was completed last. It will be noted that the elevations are given as if they were reckoned downward from the surface.

Work Downward and Thus Escape Rock Falls

By following this schedule in the lining of the shaft much time was saved. It facilitated the carrying on of dual operations, namely, the building of the stairway and the pouring of the concrete lining. In trimming the wall rock, preparatory to placing the lining, a number of light blasts were required. If the operation had begun at the bottom and proceeded continuously upward, one may easily realize how much time would have been lost in raising and lowering men to and from the surface. In this case, however, it was necessary to raise them a distance of only 60 ft. or less before blasting.

Aside from the time thus saved this method had another marked advantage in that the men, well aware that a safety haven lay only a short distance above them, naturally worked with greater confidence. Also at all times a minimum length of exposed and unsupported rock was overhead. If the lining had started at the bottom, temporary timbering throughout the entire depth of the shaft would have been required for safety, previous to the lining operation proper. Such timbering would have complicated the work needlessly.

The method described not only was speedy but appreciably reduced the cost of the lining. The time required to complete the work was less than that estimated, and the actual expense was much lower than had at first been deemed necessary.

Masonry Collar of Shaft Not Disturbed

As completed the shaft is a little over 400 ft. in depth, with inside dimensions 11 ft. 6 in. x 15 ft. 2 in. When the shaft was sunk a masonry collar had been built at the mouth of the shaft. This served as a foundation for the fan, and in the relining of the shaft it was left in place. The minimum thickness of the lining is about 9 in. though in many places the concrete is two or more feet thick. These excessive thicknesses were poured at the points where extremely soft strata, with resulting voids, were encountered, the lining as a rule being carried to the solid. It was poured in 5-ft. sections and in the entire work 1,000 tons of gravel, 500 tons of sand and 5,400 sacks of cement were used in a 1:2:4 mix. The capacity of the bucket was ½ cu.yd.

Some of the provisions for drainage of this shaft are unusual but efficient. The shaft itself is dry, no seepage occurring through the lining. Sweat, however, is found on the walls as in all fresh-air shafts, the moisture in the atmosphere condensing on the cold surfaces. Water coming from the rock behind the lining is caught in water rings and pipes, and is discharged into the sump at the bottom through a 6-in. wrought-iron pipe. The quantity of this water is estimated as the equivalent of a 4-in. stream running continuously.

The method of draining, including the arrangement of the water-spaces, rings and pipes, is shown in Fig. 3. This covers only the upper 60-ft. section, below which little water occurs. In the lower portions small wooden boxings inserted in the concrete draw off the water. These are drained through 2-in. wrought-iron pipes, and empty into the 6-in. pipe extending from the main water ring at the 60-ft. level to the bottom of the shaft.

From the brink of the shaft to the 35-ft. level where a large water space is located, four 4-in. terra-cotta pipes in 2-ft. lengths are embedded in the concrete, one being placed in each wall. In this way the water accumulating in the small water spaces above the 35-ft. level is removed. Between the 40- and 45-ft. levels water pours down in sheets. The stratum between these two levels is a sandstone, accounting for the large volume of water. It will be noted, referring to Fig. 3, that the open space behind the lining is 10 ft. in height. Three doors have been built into the lining at this point. This provision will permit a man to enter the water ring and pass completely around the shaft, removing any and all material likely to collect and hamper drainage. The lower 5 ft. of the ring is not entirely open.

Vertical slabs placed at intervals give the necessary rigidity to the lining at this point, and form sinks or sumps, from which twelve terra-cotta pipes lead to the main water ring below. It is on top of these slabs that a man

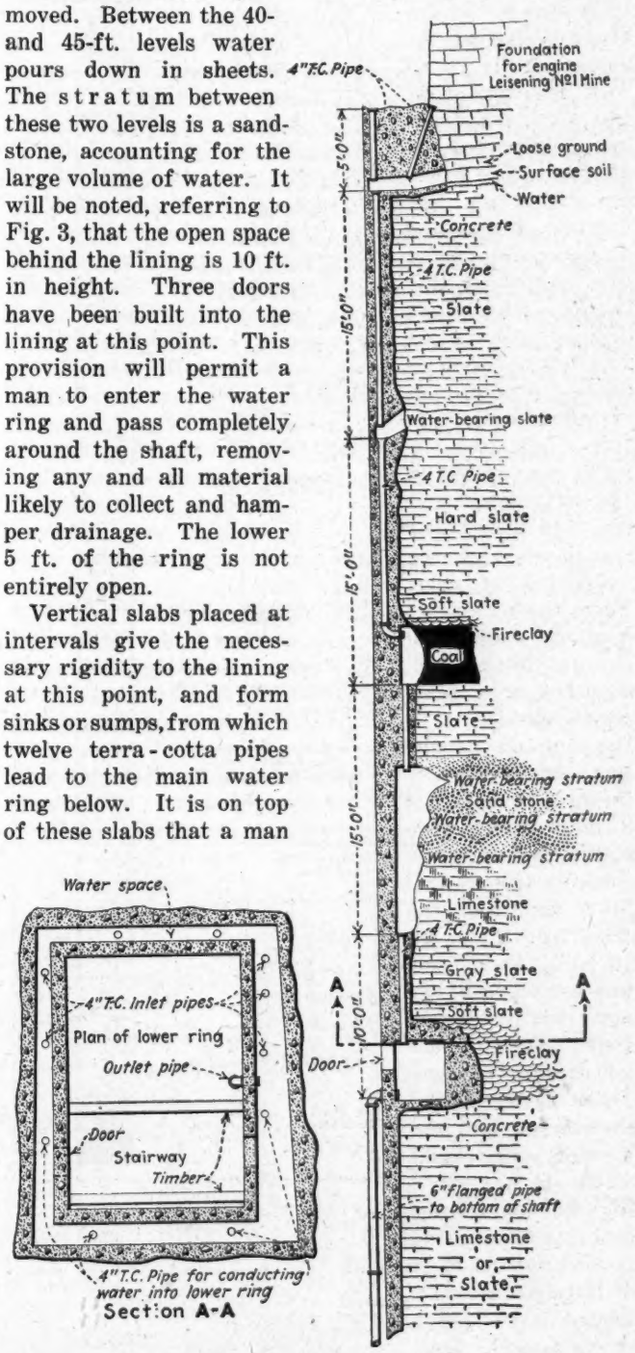


FIG. 3. VERTICAL SECTION OF ONE WALL OF SHAFT

This shows the top section of the shaft, which, having many water-bearing strata, had been well timbered within a few years. This section was the last to be concreted, work being commenced in the section just below it and then being continued downward by successive lengths of 60 ft., each of which was worked upward from its lower end. Finally the section shown was built. Section AA shows a plan of the main water ring to which twelve 4-in. pipes bring the water collected from the strata above.

gets his footing in traveling around the shaft lining. The surface of the sandstone wall rock was sprinkled with cement to minimize disintegration. Should the terra-cotta pipes in the upper sections become clogged, the water in the spaces and rings may be tapped by pipes placed in holes which may be drilled through the lining. Between the levels of 55 and 50 ft. the main water ring is located. Into this all the water from above discharges. As shown in Fig. 3, no rock is exposed at this level, the strata being concreted on all sides. The measure at this point is a fireclay. Years ago a water-ring sump was located at this level, into which drained the water from two rings above. A pump was installed adjacent to this ring and the water was raised to the surface, where it was used in the boiler room and for the quenching of coke. From the present ring the water discharges into a 6-in. wrought-iron pipe, which carries it to the sump on the bottom. In the work of lining this shaft two 8-hour shifts were maintained, one crew working from 6 a.m. to 2 p.m. and the other from 2 p.m. till 10 p.m. Each crew was composed of six men, who were assisted by an engineer and two top tenders. These latter mixed the concrete and performed other tasks on the surface. During the hours when concrete was being poured two members of the shaft crew attended to the loading of the bucket. Only two carpenters working on a 9-hour shift were needed on this job. The schedule of operation was such as to permit most of the concrete mixing and pouring to be done during daylight hours. The plan followed and the care and diligence exercised by those in charge resulted in the immunity from accident already noted.

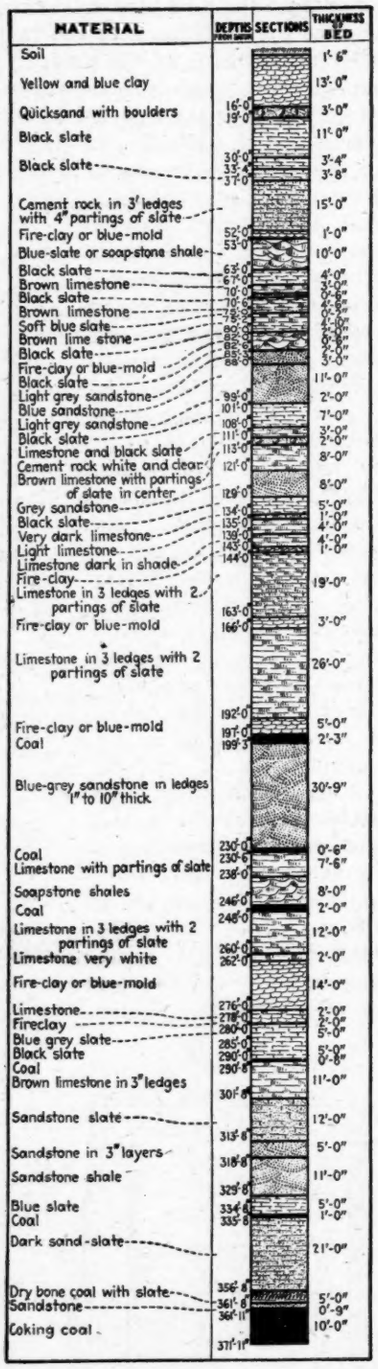

MATERIAL
DEPTHS FROM SURFACE
SECTIONS
THICKNESS OF BED
Soil 1'-6"
Yellow and blue clay 13'-0"
Quicksand with boulders 16'-0" 19'-0" 3'-0"
Black slate 11'-0"
Black slate 30'-0" 33'-4" 37'-0" 3'-4" 3'-8"
Cement rock in 3' ledges with 4" partings of slate 15'-0"
Fire-clay or blue-mold 52'-0" 1'-0"
Blue-slate or soap-stone shale 53'-0" 10'-0"
Black slate 63'-0" 4'-0"
Brown limestone 67'-0" 3'-0"
Black slate 70'-0" 2'-6"
Brown limestone 70'-6" 6'-0"
Soft blue slate 76'-6" 3'-0"
Brown lime stone 80'-0" 2'-0"
Black slate 82'-0" 6'-0"
Fire-clay or blue-mold 88'-0" 5'-0"
Black slate 11'-0"
Light grey sandstone 99'-0" 2'-0"
Blue sandstone 101'-0" 7'-0"
Light grey sandstone 108'-0" 3'-0"
Black slate 111'-0" 2'-0"
Limestone and black slate 113'-0" 8'-0"
Cement rock white and clear 121'-0"
Brown limestone with partings of slate in center 129'-0" 8'-0"
Grey sandstone 134'-0" 5'-0"
Black slate 135'-0" 1'-0"
Very dark limestone 139'-0" 4'-0"
Light limestone 143'-0" 1'-0"
Limestone dark in shade 144'-0"
Fire-clay 19'-0"
Limestone in 3 ledges with 2 partings of slate 163'-0"
Fire-clay or blue-mold 166'-0" 3'-0"
Limestone in 3 ledges with 2 partings of slate 26'-0"
192'-0"
Fire-clay or blue-mold 197'-0" 5'-0"
Coal 199'-3" 2'-3"
Blue-grey sandstone in ledges 1" to 10" thick 30'-9"
Coal 230'-0" 0'-6"
Limestone with partings of slate 230'-6" 238'-0" 7'-6"
Soapstone shales 8'-0"
Coal 246'-0" 2'-0"
Limestone in 3 ledges with 2 partings of slate 248'-0" 260'-0" 12'-0"
Limestone very white 262'-0" 2'-0"
Fire-clay or blue-mold 14'-0"
Limestone 276'-0" 2'-0"
Fireclay 278'-0" 2'-0"
Blue grey slate 280'-0" 5'-0"
Black slate 285'-0" 5'-0"
Coal 290'-0" 290'-8" 0'-8"
Brown limestone in 3" ledges 301'-8" 11'-0"
Sandstone slate 313'-8" 12'-0"
Sandstone in 3" layers 318'-8" 5'-0"
Sandstone shale 329'-8" 11'-0"
Blue slate 334'-8" 5'-0"
Coal 335'-8" 1'-0"
Dark sand-slate 21'-0"
Dry bone coal with slate 356'-8" 361'-8" 5'-0"
Sandstone 366'-11" 0'-9"
Coking coal 371'-11" 10'-0"

FIG. 4. SECTION OF STRATA IN SHAFT

The upper part of the cement rock under the black slate is full of water and gave much trouble. The lining is built well within the strata at this point so as to give full opportunity for the water to escape.

Geological Survey Reports and Investigations

North Carolina Has a Small Field of High-Grade Triassic Coal

A TRACT of land containing not less than fifteen million tons of excellent steam and coking coal has been outlined by mines and drillholes in the Deep River coal field of North Carolina. It is estimated also that in the remainder of the field at least 60 million tons is available at depths not exceeding 1,500 ft.

These figures are the result of a recent examination made by Marius R. Campbell under the joint auspices of the U. S. Geological Survey and the North Carolina State Geological Survey. The northwestern side of the Triassic basin, in Lee, Chatham and Moore counties, is underlaid with a coal bed of workable thickness and quality. Measurements of this bed in the mines at Cumnock and Farmville, on the outcrop at Gulf and Haw Branch, and in boreholes within the basin show that its thickness ranges from 40 to 50 in. along the outcrop for a distance of about twelve miles as well as into the basin from the outcrop for a distance of one and one-half to three and one-half miles, where it passes below a depth of 1,500 ft., which is now considered the limit of workability. If it should be found that mining can be carried to a greater depth, a much larger quantity than that stated above would be available.

The coal bed is remarkably regular in thickness and composition. It contains no partings, but in places carries a narrow band of bone at the bottom. The roof is a thick bed of hard sandstone underlaid by 2 to 10 in. of "draw slate," which usually falls some time after the coal has been removed. The floor is equally hard, being composed of "black band," or carbonate of iron. This provides an excellent foundation for tracks and other equipment within the mines.

The rocks of the basin are in many places cut by dikes of igneous rock, which cause much trouble and expense in mining. These dikes were once regarded as insurmountable, but by driving the entry through them to the farther side, the coal bed in every instance will be found nearly undisturbed. A few faults, which offset the bed from a few inches to many feet, have been encountered. These, however, appear to be most abundant on the margins of the field; few are found in the deeper parts of the basin.

On the northwest side of the field the coal bed dips into the basin at angles ranging from 20 to 25 deg., but at a depth of a few hundred feet the inclination generally flattens toward the southeast. At Farmville the dip along the axis of the basin is only 4 to 5 deg. The coal bed carries little water, so that even in the Cumnock mine, which lies close to Deep River and below its level, the rooms and entries are so dry that it is necessary to sprinkle them occasionally.

The coal is moderately low in ash, which probably does not average over 8 per cent. Judging by its appearance where it is cut by dikes, it will make good coke. It would be an excellent domestic fuel were not its cleavage so highly developed. When mined, most of it breaks up into small fragments, only a small percentage being lump.

Old Anthracite Mine Electrified Without Replacing Any Part of Equipment Adaptable to New Power

Steam Operation of a Mine Almost Sixty Years Old Became Too Expensive to Be Continued—Plant Accordingly Was Electrified, as Large a Portion of the Old Machines as Possible Being Retained

By W. H. Lesser*
Frackville, Pa.

AMONG the nine anthracite operations owned by Madeira, Hill & Co., with general offices in Philadelphia, Pa., is the Kehley's Run Mine of the Thomas Colliery Co. This mine is located in Shenandoah, Pa., and is leased from the Girard Estate. It has been producing coal since 1865, during which year it shipped about 2,400 tons. Records show that up until the end of December, 1921, 7,248,945 tons of coal had been shipped from this property. The peak of production has long been passed, but a large tonnage remains, which is, however, mined at much expense. At present the output is 18,000 tons per month.

Decision to completely electrify the plant was made after a thorough investigation of the relative cost of operation with steam and electricity. The limited daily tonnage and the high royalty (in excess of $1 per ton on all sizes) exacted by the lessor also were factors taken into consideration. It was realized that the remaining tonnage must be won at a lower cost for power than was possible with a steam plant, which was just as expensive to operate when producing the present tonnage as when the output was at its maximum.

Steam required to operate the plant was produced in a boiler installation containing twelve hand-fired horizontal return-tubular boilers the ages of which were such that it would have been necessary to replace them in the near future. The engines and pumps were of an ancient design with a rate of steam consumption far above that obtained in the modern steam engine. This is a condition not at all uncommon about mines. The steam-producing and consuming equipment as a whole was not of a type that would develop power at a low cost.

Investigation showed that to electrify the plant about 1,900 hp. would be needed. In introducing the motors plans were laid so that as much of each of the old steam-driven machines would be used as existing conditions would permit. As a result of the decision not a single complete electric hoist was purchased. Consequently an appreciable saving was made in the cost of electrification.

Electric energy was obtained from the Pennsylvania Power & Light Co. through its substation at Shenandoah. It is supplied to the colliery at 4,000 volts, 3-phase, 60-cycles. An outdoor substation of the pole type, as shown in Fig. 1, reduces the incoming potential to 440 volts. The high-tension line has been extended to Slopes Nos. 3 and 5, where small substations were built to handle the load at those points. The main substation contains three 333-kva. single-phase transformers with standard outdoor substation units provided with choke coils, lightning arresters and fuses. A recording voltmeter is installed on the high-tension side of the substation in order to keep a record of the voltage delivered by the power company.

*Mechanical engineer, Thomas Colliery Co.

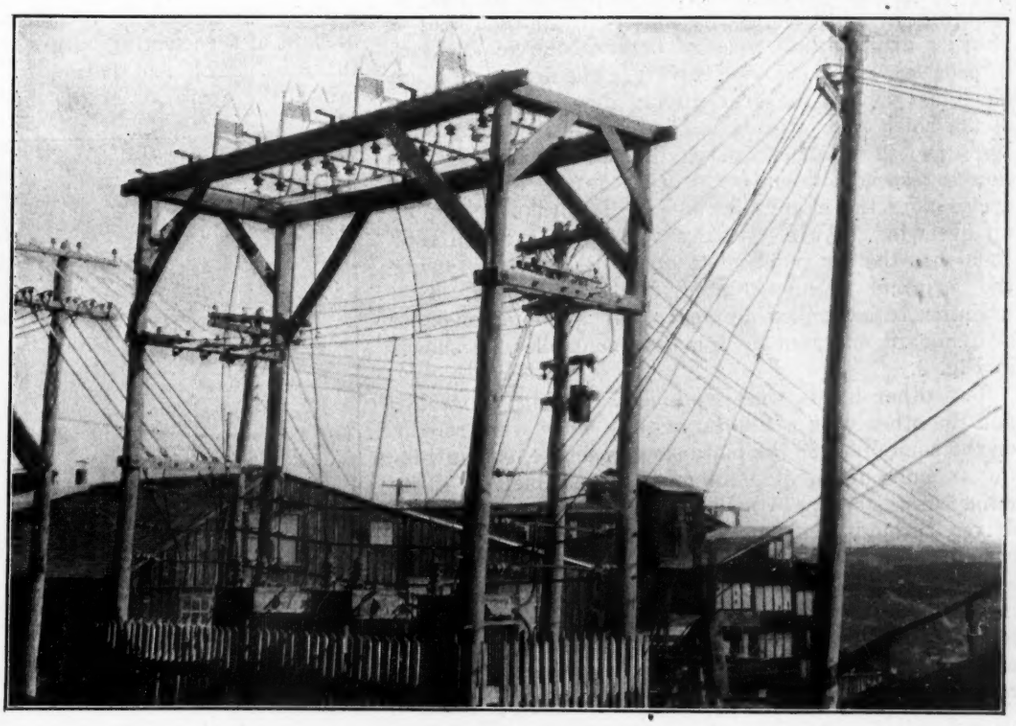


FIG. 1.

Cutdoor Substation

At the Kehley's Run Mine of the Thomas Colliery Co. Electric current is supplied by the Pennsylvania Power & Light Co. at 4,000 volts, 3 phase, 60 cycles and stepped down by three 333-kva. single-phase transformers to 440 volts. The substation has choke coils, lightning arresters and fuses and a voltmeter to record the voltage of the incoming high-tension current. However, this is the principal substation. The high-tension line has been extended also to two other slopes and smaller substations have been erected to handle the loads at those points.

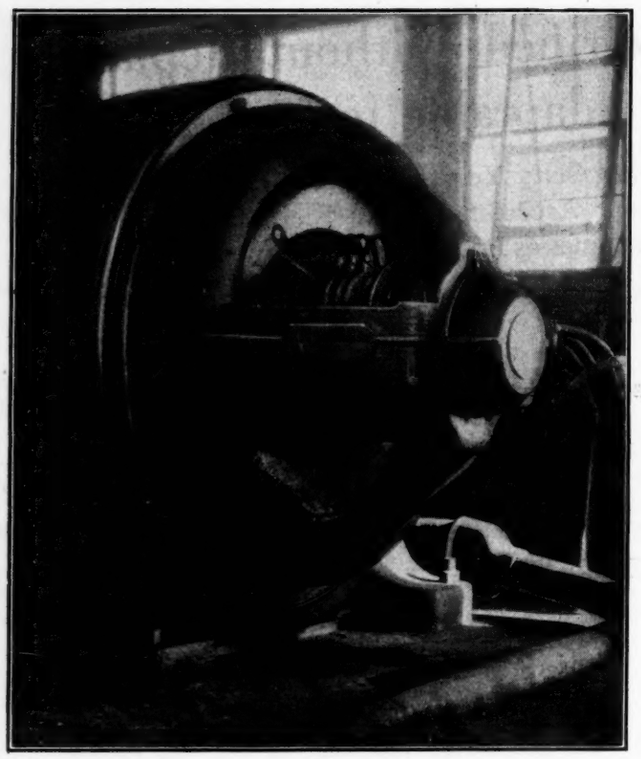


FIG. 2. MAIN-SLOPE HOIST MOTOR

The hoist raises an unbalanced load of 48 tons on a 58-deg. pitch at a full-load speed of 760 ft. per minute. The motor is of 350 hp.

Each motor installation is supplied with power through disconnecting switches, choke coils, lightning arresters and an oil switch equipped with overload and no-voltage releases. The power requirements on the surface include hoisting, conveying, breaker, ventilating and pumping operations. The main slope hoist, as shown in Fig. 2, is operated by a 350-hp. motor. It is calculated to raise an unbalanced load of 9,600 lb. on a 58-deg. pitch at a full-load speed of 760 ft. per minute.

The layout of this machine, as shown in Fig. 4, required in addition to the motor the purchase of a shaft, a drum pinion, a set of herringbone gears, a set of pedestals and a flexible coupling. The drum and drum shaft as well as the overwinding devices used on the steam hoist were utilized in the electrified machine. A limit switch attached to the drum shaft reduces the hoisting speed automatically near the end of the hoist cycle, stops the motor and applies the brake in case of an overwind. An electrically operated air compressor furnishes the air required to operate the brakes, using the original steam-actuated brake cylinders. This machine is controlled by means of a contactor-panel switchboard operated by a master controller, as shown in Fig. 3.

Two other hoists were equipped, one with a 150-hp. and the other with a 100-hp. motor. They were rebuilt on the same lines as the main-slope machine, each utilizing as much of the old equipment as possible. A 12-ft. mine fan was equipped with a 25-hp. slip-ring motor and driven through a silent chain inclosed in a dustproof casing. A slip-ring was selected in preference to a squirrel-cage motor because of the high starting torque necessary to bring a fan of this size up to speed. The breaker machinery is driven by two motors, one of 250 and one of 100 hp. Each motor is controlled from a central point, a distance of 200 ft. separating them.

Water is supplied to the breaker by a two-stage centrifugal pump and a 10 x 36-in. reciprocating pump driven by a motor through a pair of gears and a belt. The latter was converted from a steam-driven machine. This is an emergency installation that has proved itself highly satisfactory for handling water containing a large quantity of coal in suspension.

The main pumping plant employed for mine drainage consists of three centrifugal pumps with a combined capacity of 3,000 gallons per minute against a head of 350 ft. Each of these machines is driven by a 150-hp. squirrel-cage motor controlled from a slate-panel board on which are mounted an ammeter and a voltmeter. A small reciprocating pump driven by a 5-hp. motor is successfully used for priming these machines.

Since electricity has been employed it has been possible to improve the mine-haulage system by the installation of two storage-battery locomotives. These are charged by an automatic charging set, a motor-generator being used to produce direct current for this purpose.

The complete list of motors and their application is shown in Table I.

TABLE I. MOTORS EMPLOYED IN ELECTRIFYING PLANT

Service	Horsepower	Service	Horsepower
Hoists		*Pumps*	
For main slope	350	For breaker	two of 75
For Buck Mountain slope	150	For mine	three of 150
For supply plane	50	For Buck Mountain slope	75
For rock conveyor	100	For priming pumps	one of 2 and one of 5
For Skidmore	35	*Compressors*	
For No. 5 slope hoist	25	For slope	25
Motors		For portable air compressor	38
For breaker	one of 100 and one of 250	*Motor-Generator*	
For cleaner	50	One set	50
For conveyor	75	*Fan*	
For shop	22	One mine fan	25

When the plant was operated by steam fourteen men were required in and about the boiler plant, and the furnaces consumed 2,400 tons of boiler fuel per month, consisting of a mixture of 50 per cent rice and 50 per cent barley coal. At the present time an average of 240,000 kw.-hr. is used per month, which represents a consumption of approximately 600 tons of fuel in the central power plant.

Elimination of boilers from the colliery removed a class of labor that is difficult to retain and handle on account of the exacting nature of the work of hand-firing furnaces. The installation of the electric drive improved the operation of the breaker machinery, because

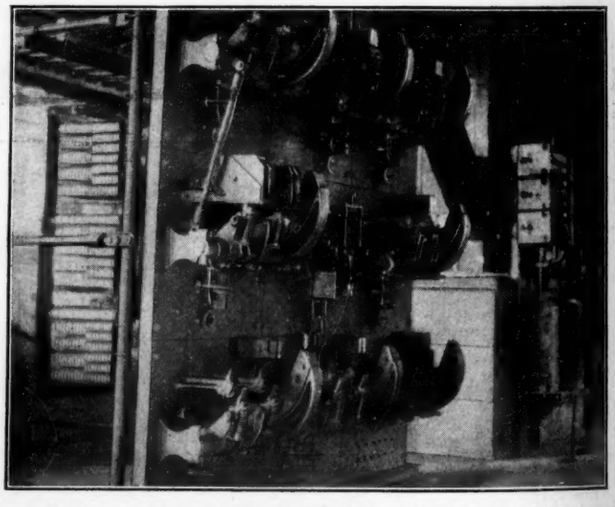


FIG. 3. CONTACTOR-PANEL SWITCHBOARD AND MASTER CONTROLLER

This is the electrical apparatus for the handling of the main-slope hoist.

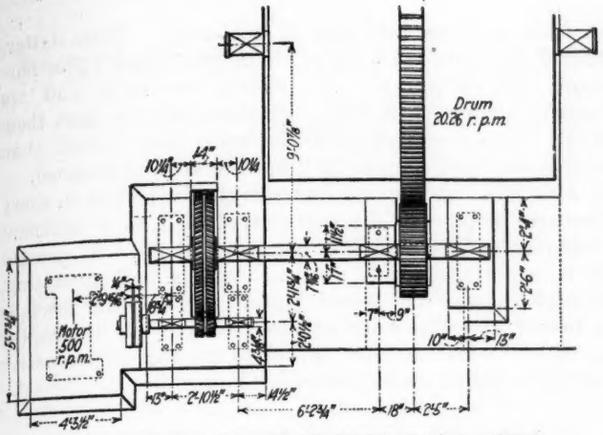


FIG. 4. MOTOR DRIVE OF MAIN-SLOPE HOIST

As the motor runs at 500 r.p.m. the speed is reduced by two reduction gears, a plain gear at the drum with a ratio of 3.75 and a herringbone gear at the motor with a ratio of 6.57, a total reduction of 24.64.

the motors maintained a more constant speed than the steam engines they replaced, uniform steam pressure having been maintained with difficulty, especially during the winter months.

The men who were accustomed to operating steam engines and pumps seemed to have no difficulty in grasping the principles involved in handling the new power. During any future suspension of the mine the working force may be reduced to a minimum, as the pumpers are the only men who will have to be kept at work. Generally speaking the operation of the plant electrically since the completion of the necessary alterations in December, 1919, has been satisfactory in every respect.

Mine-Type Telephones Unsafe in Gas*

BY L. C. ILSLEY†

A PRELIMINARY investigation has recently been made by the U. S. Bureau of Mines to determine whether the ordinary mine-type telephone is entirely safe in gaseous atmospheres. Two well-known makes of mine-type phones were purchased for this investigation (A and B).

It is not conceivable that the current necessary for talking over telephones could ignite gas. However, such phones are provided with efficient magnetos, and it was believed that danger might result from the ringing of the magneto. Again, while this type of phone has been designed to have a certain measure of dust and moisture tightness, evidently it has not been designed as an explosion-proof device, either with regard to cover joints and fastenings or strength of castings. Therefore the problem was simplified. First it was assumed that, owing to the construction of the telephones, the gas would penetrate into their interior, and the question was merely whether the gas would be ignited from the operation of the magneto.

The telephone under investigation was placed in a large testing gallery of approximately 400 cu.ft. capacity, used by the bureau for investigation of all types of electrical equipment in gaseous atmospheres. The gallery is so arranged that it can be filled with an explosive mixture of natural gas and air.

The inner and outer doors of this telephone were left open, so that the gas could easily enter the interior of the telephone. The other telephone was placed at a point some distance from the gallery, and connected to the first telephone through a metallic circuit. In series with this circuit was a non-inductive resistance, equivalent to a double circuit of No. 18 A. W. G. copper wire, one mile in length. The telephone inside the gallery was fitted with an attachment which permitted the ringer to be operated from outside the gallery. By another attachment the receiver circuit could be opened or closed in like manner.

Tests were made by ringing the telephone inside the gallery when filled with gas, but not connected to the external circuit; by ringing the inside telephone when connected to the external circuit, and by ringing the outside telephone while the receiver circuit of the inside telephone was being opened and closed.

Several series of trials were made with telephone A not connected to the external circuit, resulting in two explosions, one at the first turn of the crank and one after about one minute. Several series of trials were made with telephone A connected to the external circuit while the ringer of the telephone under test was being operated, resulting in one explosion. A series of trials was made by ringing the outside telephone A while the receiver circuit of the inside telephone A was being opened and closed, resulting in an explosion.

Two series of trials were made with telephone B not connected to the external circuit, resulting in two explosions, one taking place at the first turn of the ringer. A series of trials was made with telephone B connected to the external circuit, resulting in an explosion after the third ring on the inside 'phone. A series of trials was made by ringing the outside telephone B while the receiver circuit of the inside telephone B was being opened and closed, resulting in an explosion.

The investigation indicates that the ordinary type of mine telephone is not safe in gaseous atmospheres and that there is need of a schedule which shall outline the requirements for telephones that may be called upon to operate under such conditions.

*From Reports of Investigations, Bureau of Mines, Serial No. 2308.

†Electrical engineer, Bureau of Mines.

Colorado Fuel & Iron Co. Has Wide Market

THE accompanying map, prepared from data submitted to *Coal Age* by the Colorado Fuel & Iron Co., gives a picture of the wide territory reached by the coal mined by that company. All its mines are in Colorado, in the Canon City, Walsenburg and Huerfano fields on the bank of the Rockies and at Crested Butte on the west slope. The company maintains 18 coal sales offices in 11 states for the distribution of both steam and domestic coal.

MARKET TERRITORY REACHED BY COLORADO FUEL & IRON CO.

Shaded lines indicate limits of market territory. Solid black areas show locations of mines. Crosses represent sales offices.

Eliminating Danger of the Small Shothole

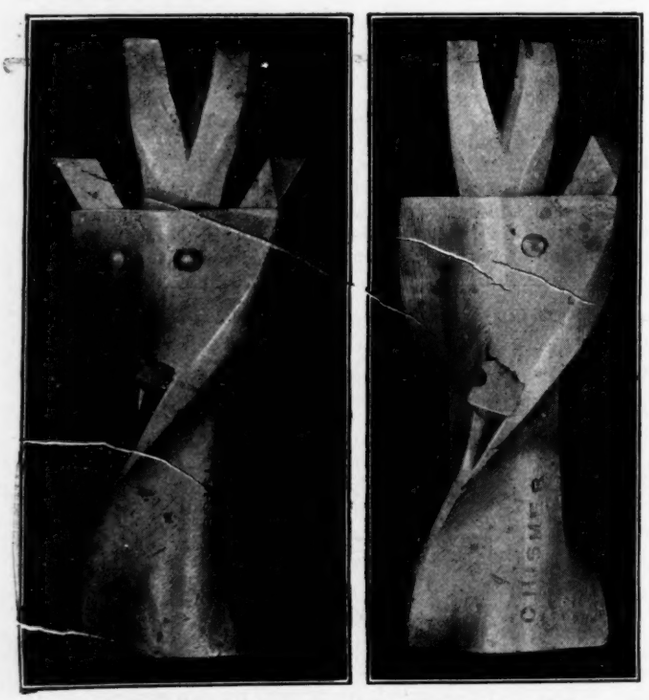
A PROLIFIC source of danger in the use of explosives at coal mines is the shothole that has been drilled to a diameter smaller than that of the cartridge. Many a miner, having made such a hole, will attempt to force the cartridge home with a tamping bar, a premature explosion not infrequently resulting.

Shotholes are drilled for the most part with a coal auger which consists ordinarily of a helix somewhat smaller than the hole to be bored, on the end of which is a cutting point of either drill or fishtail shape the width of which determines the diameter of the finished hole. Any wear on the point of the auger thus decreases the size of the hole drilled. In consequence drills must be kept to gage if this danger is to be avoided.

To obviate this difficulty and to render sharpening of the drill a comparatively easy operation, George Chismer, of Kingston, Pa., a miner of many years' experience has invented the drill shown in the accompanying illustrations. The type intended for use in coal is made with a helix 2¼ in. in diameter, and the diameter of the helix for the drill made for boring rock is 1¾ in., these being usual sizes for cartridges in anthracite mines. With auger bodies of these sizes the holes made must necessarily be somewhat larger. This assures that the charge of explosive can be pushed home with ease and that in so doing the cartridge will not be deformed or crushed, which might cause a premature detonation of the explosive.

Drills intended for use in coal are fitted with one side cutter while those designed for rock have two. All cutters, whether side or center, are readily removable, being held in place by steel pins of standard size and taper that fit into a notch in the bit steel and so are quickly driven to place. This permits the bits to be taken out and sharpened, with a file or on an emery wheel. As the bits wear they may be moved outward a notch at a time. The helix of this drill is a steel casting and the bits are of tool-steel. These latter, therefore, may be given any temper desired. Furthermore the cutters are set within the helix and are largely supported thereby. Pressure exerted upon them while boring consequently is more longitudinal than transverse, and danger of breakage is thus lessened.

A drill of this kind needs no gaging—the bits in every instance must cut the material drilled to a sufficient diameter or the drill will not work at all. At present it is being made only for use with a post mounting, though no obstacle would appear to its being used as a breast auger or with an electric drill. It is adapted to any rotative machine but not to one that is percussive or that combines concussion with rotation.



DRILL POINT WITH EASILY-DETACHABLE BITS

Knocking out one or two standard taper pins, as the case may be, allows the bits to be withdrawn for sharpening or adjustment. Inserting the pins locks the bits in place.

New Induction Motors for Old

EXPERIENCE has proved that burned-out or worn rotors of induction machines can be repaired by the aid of the welding torch. It is claimed that by proper welding, repairs to such motors can be made permanent and that machines of earlier types can be rendered equal in efficiency to those of later design.

The rotor bars in the old-type motors are heavy conductors embedded in laminated cores and short-circuited on the ends by means of brass, bronze or copper rings. The bars, or conductors, usually are attached to the resisting rings by means of rivets, screws, bolts or solder. It is obvious that such connections will work loose under constant vibration or as the result of expansion and contraction, and when this occurs it will decrease the positiveness of the contacts. So long as they are comparatively new such motors function satisfactorily under ordinary working conditions, but trouble is almost sure to develop after they have been in long use or subjected to severe service. The usual way of repairing a burned-out or dragging machine is to remove the bars and rings of the rotor and replace them with new parts of identical construction. This virtually renews the motor, but does not obviate the difficulty.

A quick and much more satisfactory repair, according to reports from J. Otis Crawford, of El Paso, Tex., is to make permanent contacts by means of the oxy-acetylene welding torch. This can be done, it is asserted, at approximately the same cost as would be entailed by the old method of reconditioning. The chief advantages of the autogenous weld over the old method lie in the shorter time required and in the permanence and serviceability of the repair.

Motors of 5, 10, 20, 50, 90 and 150 hp. have been reclaimed in this manner, the procedure being as follows: The rotors are removed from the stators and placed in a lathe so that the bar ends can be beveled to an angle of 45 deg., starting from the ring surface. The metal removed is then replaced by a ring of the best Tobin bronze welding rod, properly fluxed and welded into place with the welding torch. When this operation has been completed and the work has time to cool, the rotor is again placed in the lathe and the work finished.

During the past year between thirty and forty motors have been reconditioned by the welding process, and it is said that there has not been a single failure in the lot. It is therefore believed that the welding torch will make possible the saving of many motors now operating in mines and industrial plants that otherwise would sooner or later have to be scrapped or reconditioned at such frequent intervals as to render them of little value in a modern installation.

Synchronous Motors Reduce Mine-Fan Power Bills*

Low Starting and Pull-In Torques of Synchronous Motors Long Prohibit Their Use for Driving Mine Fans—Closing Chimney During Start or Installing Suitable Clutch Between Fan and Motor Obviates Difficulty

BY FRANK W. CRAMER† AND A. A. MACDONALD‡

MUCH has been printed concerning the replacement of the steam engine by the electric motor. It has been proved repeatedly that the electric drive eliminates the inefficient boiler house used at the small installation, that it is more economical and requires fewer men to operate, that it has the advantage of cleanliness and in most cases is cheaper to install.

At coal mines the large units such as hoists, air compressors, pumps and direct-current generators, are quite frequently driven by steam engines. Few of them are so large that the installation of turbo-generators to furnish electric power is justified, and when they are large enough to make such equipment desirable, the water supply is such as to make it impossible to use condensers. The best solution of the difficulty is, therefore, to purchase energy from some central station.

Public-service corporations fortunately have made mine electrification possible. Their power lines are now available in every mining section of Pennsylvania, and the rates charged are such that electrification results in appreciable saving.

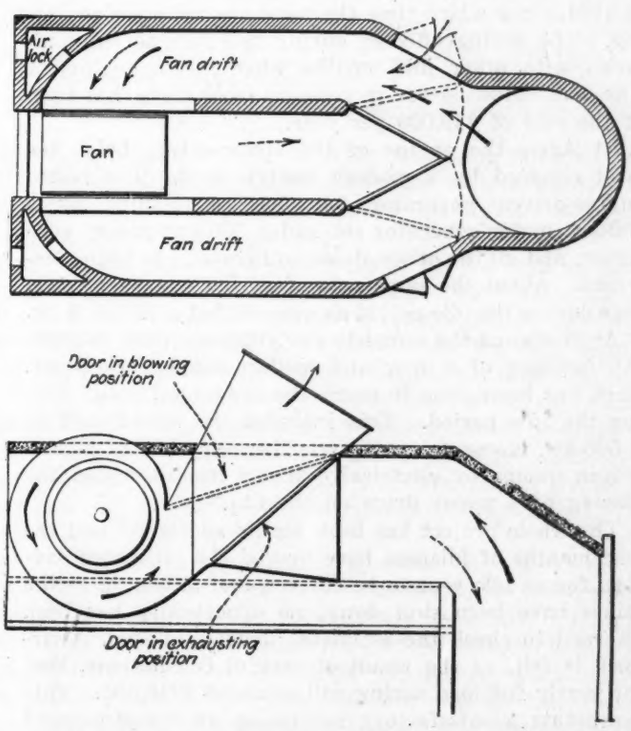
A brief history and description of the mines with which this paper deals may be of interest. Just prior to the war the Midvale Steel & Ordnance Co. acquired the Marianna, Acme and Hazel Kirk mines from the Pittsburgh-Buffalo Coal Co. and the Pittsburgh-Westmoreland Coal Co. The Marianna mine was opened some fifteen years ago, and at that time it was considered a model. The mines of the Pittsburgh-Westmoreland group were opened as small independent operations, being later acquired by the above-named company. Each of these plants was equipped with direct-current engine-driven generators that supplied power for haulage, small pumps and lights. All the large drives were by steam engine.

OLD PLANTS WERE WASTEFUL AND INEFFICIENT

Soon after these properties were acquired it became apparent that the power costs, both steam and electric, were excessive, in fact an average for all the plants was about 2.6c. per kilowatt-hour of reasonable work done. A careful study revealed that the boiler plants themselves were highly inefficient and wasteful. Steam for the engines was conveyed long distances, with consequent heavy losses, and with the failing efficiency of labor during the boom war times, about the same number of men were required in the no-load as in the peak hours.

This difficulty could be corrected in either one of two ways. The first was the construction of a modern central station at Marianna to supply power for that mine and for any future developments necessary to operate the coal holdings tributary thereto, which lie to the southwest of the present opening. To supply the Acme and Hazel Kirk operations from this station would have required the building of about twelve miles of transmission line. One condition adverse to this scheme was the all too common failing of inland mining regions—namely, an insufficient water supply. Another determining factor was the difficulty experienced during boom times in attracting and retaining in a mining town the class of labor neecssary for work of this kind.

The second course of procedure was the purchase of power. After much thought it was finally decided that the service offered by the West Penn Power Co. would in the end afford the better solution. The reliability of the supply of current, however, could not be too carefully considered. When the final plans were worked out, provision was made to supply Marianna mine from three separate transmission lines. The main line comes from the substation at Washington, Pa., on the main trunk line between the Windsor and the Connellsville plants; another line comes from a substation situated between Washington and Connellsville, and a third comes from Monongahela City. When these are completed the power supply will not be totally cut off unless all three of the large West Penn generating stations are out of commission. The first line of the three will be used in ordinary operation, and the other two will



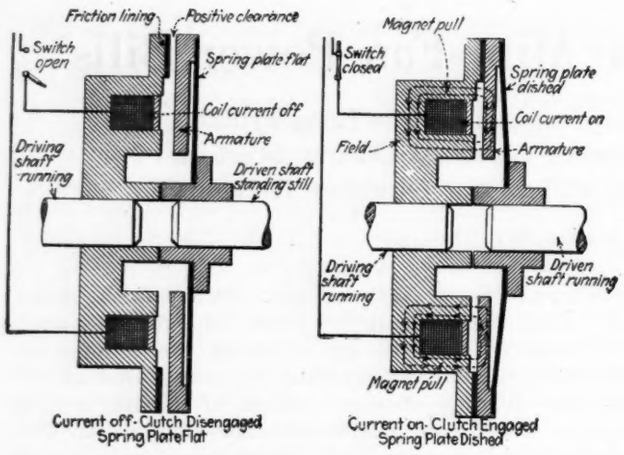
PLAN AND ELEVATION OF MINE FAN IN OPERATION

The dotted lines and dotted arrows show the position of the doors and the course of the air travel respectively when the fan is blowing air into the mine whereas the solid lines and solid arrows show the position of the doors and the course of the air when the fan is exhausting.

*Abstract of a paper entitled "Reducing Power Bills on Mine Fans with Synchronous Motors," presented before the Association of Iron and Steel Electrical Engineers, March 18, 1922, at Pittsburgh, Pa.

†Electrical Department, Cambria Steel Co., Johnstown, Pa.

‡Chief engineer, Union Coal & Coke Co., Bentleyville, Pa.



CLUTCH WHICH ATTACHES FAN TO REVOLVING MOTOR

By passing a current through a field coil on the shaft of the motor it is magnetized and in consequence attracts and so engages by its magnetism a circular armature on the fan shaft. Thus the clutch can be put in operation while the motor is revolving at full speed. A dished spring plate holds the armature out of engagement when no magnetic attraction is provided.

serve during emergencies. Energy is transmitted at 25,000 volts and stepped down to 2,300 volts before being used. Under the arrangement described the power will be unusually reliable. It is realized that similar protection against failure of the supply is not always possible; at Acme and Hazel Kirk, a two-way service was deemed sufficient.

At the present time the electrification of Acme and Hazel Kirk is completed. The work at the latter mine entailed supplanting three engine-driven generators with motor-generator sets, driving two fans by motors and replacing the steam mine hoist with a modern electrically driven machine. The improvements at this mine cost about $45,000. The work was completed early in 1921, since which time the mine has not been operating. The saving effected during this idle period compared with other idle months when steam equipment was used, allowing for increase in labor costs, has been at the rate of $49,000 per year.

At Acme the engine of the steam-driven hoist has been replaced by a modern electric unit. The belted engine-driven generator has been supplanted by a 500-kw. motor-generator set and a 500-kw. rotary converter, and all the other steam equipment has been electrified. About the same rate of saving has been made here during the idle period as was effected at Hazel Kirk.

At Marianna the complete electrification plan included the building of a new and modern tipple. Sufficient work has been done to carry the mine electrically during the idle period. This included the installation of a 500-kw. motor-generator set, the replacing of steam-driven pumps by electrically driven machines and the placing of a motor drive on the fan.

The whole project has been highly successful and the past months of idleness have proved the estimated savings for an idle year to be correct, and although, as the mines have been shut down, no opportunity has been afforded to check the estimates under full load, assurance is felt, as the result of careful calculations, that the yearly full-load saving will be about $210,000. This represents a satisfactory return on an investment of approximately $400,000.

However, it is not the purpose here to dwell on the savings possible through the electrification of coal mines. The foregoing remarks are intended rather to suggest to those who are interested in steam-equipped plants that it might be wise to investigate thoroughly whether electrification would not be profitable.

In opening a new mine, the selection of a fan of the proper kind and capacity to render a lifetime of service is a somewhat hazardous undertaking, for many conditions must be assumed that in after years may no longer exist. Particularly did this uncertainty present itself fifteen or twenty years ago, when the characteristics of fans were not as well understood as they now are. Throughout the country many mine fans doubtless are operating that a careful investigation would prove fit subjects for interment in the scrap pile. At least this was the experience gained with the fans inherited at Marianna and at Acme mines.

At Marianna a patriarch of wonderful physical proportions was found. This fan was 35 ft. in diameter and 8 ft. wide, thus possessing a cubical capacity of about 7,880 cu.ft. It was directly connected on either side to a 26 x 48-in. engine of the Corliss-valve type and when operating at 60 r.p.m. produced 312,000 cu.ft. of air against a water gage of 3.03 in. and consumed while doing this quantity of work 550 i.h.p. Thus the efficiency was about 27 per cent. There were also appreciable radiation losses to be met, for the fan was located over 800 ft. from the boiler house.

As it was considered desirable to increase the quantity of air delivered to a minimum of 400,000 cu.ft. and to provide for an ultimate capacity of 500,000 cu.ft. it was readily agreed that an increase in relative efficiency of 30 or 40 per cent would provide a good return on quite a large investment. After a thorough investigation it was finally decided to purchase an 11 ft. 7 in. x 6 ft. 3 in. double-inlet Sirocco fan having a normal capacity of 500,000 cu.ft. per minute against 7.83 in. of water gage when operating at 220 r.p.m. This fan was supplied by the builders with a guarantee of 65-per cent over-all efficiency.

Fan Wasted Seventy Per Cent of Power

At Acme approximately similar conditions prevailed. An 18 x 6-ft. fan was driven by belt from a 300-hp. induction motor, producing 169,000 cu.ft. of air per minute against a water gage of 3 in., consuming meanwhile 255 hp., thus affording an efficiency of about 31.4 per cent. Here again the fan was too large for the work required. It can be proved both theoretically and by experiment that an otherwise well-designed fan, if either too large or too small for the work required, will have a low efficiency. For instance, the old Marianna fan when operating at 60 r.p.m. had a volumetric capacity of 472,800 cu.ft. and a peripheral velocity of 6,594 ft. per minute. As the quantity of air produced at this speed was but 312,000 cu.ft. per minute, the volumetric efficiency was only 66 per cent and the manometric efficiency about 55 per cent. In other words, a great mass was being revolved to do a small quantity of work. This was comparable to driving carpet tacks with a 20-lb. sledge hammer.

For Acme was purchased a 9 ft. 6 in. x 4 ft. 9 in. double-inlet Sirocco fan with a normal capacity of 300,000 cu.ft. of air against an 8-in. water gage. This had a guarantee of 76-per cent over-all efficiency. As the power required to operate these fans, even at the high efficiencies guaranteed, was appreciable, the type of drive to be used was carefully selected.

This paper is chiefly concerned with the type of drive finally chosen, namely, a direct-connected syn-

chronous motor. It is believed that the drives installed on the Acme and Marianna fans are pioneers of their kind and mark a pronounced step forward in electrical installation.

At mines in the Johnstown district it is common practice to direct-connect induction motors to either end of the fan shaft by means of sliding couplings. The idea in using the two motors is that the one of less horsepower and slower speed can be used in case of emergency or to supply the mines on Sundays or idle days, when less air is needed. To obtain induction motors of the slow speeds necessary to suit the Johnstown plants is, of course, not a difficult problem, as the power supply is 25-cycle current and a standard induction motor can be provided.

Direct-Connected Induction Motor Unsuitable

With a 60-cycle supply a motor with a synchronous speed of 180 r.p.m. has forty poles and is an extremely expensive machine to build. In addition to this the power factor is low when compared with that of the higher-speed motors. For a 600-hp. 180-r.p.m. 2,200-volt 60-cycle induction motor the best power factor guarantee offered by the manufacturers was 77 per cent on full load and 71 per cent on three-quarter load. As the demand is figured by dividing the kilowatts consumed by the power factor and multiplying by the diversity factor, such a motor would be expensive to operate. The direct-connected induction motor, therefore, was rejected as being impossible.

The possibility of substituting belts and rope drives for gears in the reduction of motor speed was next investigated. The turbo-gear, which has a high efficiency and allows of alignment of the motor and fan shafts, was given first consideration. This device would permit of employing a high-speed induction motor possessing a good power factor. The fan manufacturers, however, asserted that this drive was too rigid and that the stresses imposed by it would soon ruin the fan.

Sealing Inlet of Fan Lowers Power Need

These stresses are caused by variations in the air volume and pressure, which arise from changing conditions in the mine. This type of drive accordingly was abandoned, and the synchronous motor came under discussion. All manufacturers emphasize the low starting and pull-in torques of this type of machine and none was enthusiastic about the proposed application. As a result an investigation was started to find a way to reduce the pull-in torque required and several tests were made on existing drives.

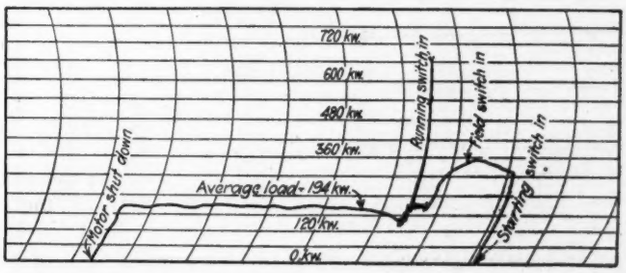
It is obvious that if no air is permitted to escape from or if air is prevented from entering the fan, there will be a reduction in the amount of work done and hence a decrease in the power required. In practice it is impossible to seal the inlet or the outlet in a field test, and for this reason the reduction in power will vary materially from that calculated or from that secured in laboratory tests.

In order to determine the reduction in power obtained by closing the stack a test was made on a 750-hp. 210-r.p.m. 2,200-volt 25-cycle direct-connected induction motor driving a 12-ft. double-inlet Sirocco fan. Under normal operating conditions the motor speed was 200 r.p.m. and the load 432 kw. With the stack closed and the air intake open, the motor speed increased to 208 r.p.m. and the motor load fell off to 268 kw. A comparison of these results shows that the load became $\frac{268}{432}$, or 62 per cent, of that existing under normal operating conditions.

This result was checked by making a test on the 300-hp. motor installed on the opposite end of the fan shaft. Under normal operating conditions this motor pulled 150 kw. at a fan speed of 143 r.p.m. With the stack closed the load was reduced to 96 kw. at 145 r.p.m. This test thus showed a reduction in power to 64 per cent of that consumed at normal load.

In the above results the speeds were not taken into consideration. If this is done it will be found that the loads will show somewhat greater reductions. Had these been synchronous motors, they would have attained full speed before the stack was opened and this speed would have remained constant.

A test was run on another fan to obtain the ratio of normal load to that imposed with the air intake closed. The air was shut off by boarding up the intake of the fan casing. The stopping employed consisted of two layers of 1-in. flooring reinforced by two 6 x 6-in. timbers. This bracing was calculated to withstand a pressure of 35 lb. per square foot. The motor driving this fan is rated at 750 hp. at 243 r.p.m. and 2,200 volts.



KILOWATT CHART OF 600-HP. MARIANNA FAN MOTOR

The graph of power used follows the zero line till the point marked "Starting switch in" is reached. Then the motor starts, and the current demand increases suddenly to about 310 kw. and rises gradually to 360 kw., after which, with the closure of the field switch, it falls to about 190 kw. When the running switch is thrown in the power used rises momentarily to 660 kw. and drops with equal suddenness, running along steadily thereafter.

By means of resistance in the rotor, the full load speed is reduced to 208 r.p.m. Under normal operating conditions this fan motor averaged 444 kw. at 206 r.p.m. against a 6-in. water gage.

After the intake was boarded up the load decreased to 243 kw., but the vacuum built up within the fan casing was far in excess of calculations. The water gage used had an 11-in. scale. As the fan came up to speed, however, the gage rose rapidly until the water was all sucked out of it. The bracing began to groan and its motion somewhat resembled that of an accordion when in action, showing that a powerful suction had been developed. The load with the intake closed was 243 kw. at a speed of 230 r.p.m., or 54.7 per cent of the normal load.

With such a difference of speed on the two tests a direct comparison of loads is hardly fair. If we assume that a synchronous motor running at 250 r.p.m. was driving this fan and assume further that the load varied with the cube of the speed, the normal operating load would have been 770 kw. and that with the intake closed would have been 300 kw. Using these figures, the load would decrease to 39 per cent of that normally imposed. This figure has been checked on the synchronous motor-driven fan and found to be a close approximation. Owing to the vacuum developed by closing the air

intake, it was decided that the safer plan would be to close the stack if a reduction in load for starting purposes was required.

Although it is possible to build synchronous motors with high pull-in torques, capable of starting fans and pulling into step if the load is 75 per cent or less of the full load rating on the motor, a better method would be to bring the motor up to speed without any load and then attach the fan. This can be done by means of a positive magnetic clutch. Like other types of clutches, this one is used for connecting and disconnecting machinery from its source of power. When the circuit through the electro-magnet is closed, the clutch is engaged; when it opens, the clutch is disengaged. One member of the clutch contains the magnet coil, which, when energized, pulls the other member into contact with it. The contact is made on a friction surface which is carried by a flange on the outside of the first member. As long as the electro-magnet is energized the two members rotate as a unit. When no current is flowing through the coil, these members stand apart, and a positive running clearance is provided. This clutch affords smooth acceleration, has no end thrust, is built for a fixed capacity, and is not affected by centrifugal force. Its reliability has long been established and hundreds of these clutches are in operation.

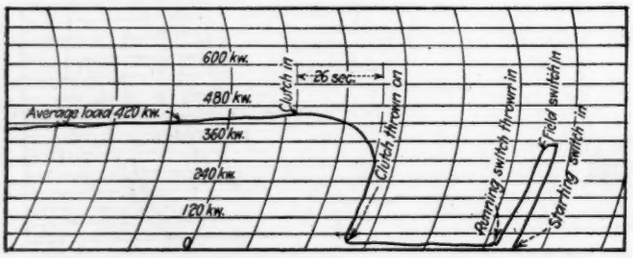


CHART OF SAME FAN WHEN CLUTCH WAS USED

This shows how effectually the clutch reduces the peak. With this arrangement the power used is never above 450 kw. and the average load 420 kw. What better provision could be made?

A 72-in. clutch of this kind installed on a 2,000-hp. motor in a wheel mill has been operated several hundred times each day without once failing. On a mine fan the clutch would have to function in starting only about once a week. By means of control resistance and relays, the operating time of these clutches can be varied over a wide period.

For the Marianna fan a 60-in. clutch was purchased complete with control equipment for a maximum operating time of 90 seconds. A 48-in. clutch with similar control was procured for the Acme fan.

As these installations were to be of a more or less experimental character synchronous motors with 35-per cent starting and 75-per cent pull-in torques were purchased. It would be possible to start and bring such machines up to speed with their respective fans attached. The motor at Marianna is rated at 600 hp., 180 r.p.m., 2,200 volts, with a power-factor correction of nine-tenths. The Acme fan motor is rated at 350 hp. at 210 r.p.m. and 2,200 volts.

Not only is the demand penalty resulting from the poor power factor of the induction motor saved by using these synchronous machines but they also earn an extra 5 per cent discount by giving line regulation when operating at the leading power factor. Both these machines drive their respective fans at the slower speed. The high-speed drive of the last-mentioned fan will be a 600-hp. 277-r.p.m. synchronous motor. That for Marianna will be a 900-hp. 220-r.p.m. synchronous motor. Both mines will have to be further developed before these larger motors will be needed, as the quantity of air furnished by the existing drives is sufficient to meet present requirements.

At Marianna the 600-hp. motor operating at 180 r.p.m. does not provide the speed for which the fan is designed and upon which the guarantee is based. A test, however, showed that even with this reduced speed the new installation developed 461,000 cu.ft. of air per minute against a water gage of 4.2 in. The motor in doing this work pulled 408 kw., or about 500 hp. With the stack closed, the motor pulled 194 kw., or 47.4 per cent of the normal load. During the tests this motor was started several times with the clutch energized and the fan attached, the stack being closed. No difficulty was experienced in getting the machine onto the line. By using 84-per cent line voltage as the starting potential the motor with the fan attached can be brought up to speed and thrown on the line with the stack open. This test proved that the high pull-in torque asked for was possessed by this machine.

Under actual operating conditions the motor will never be put on the line with the fan attached and the stack open. In an emergency it may be necessary to bolt the two halves of the clutch together; the stack then can be closed and the fan started as shown by the graphic chart.

At Acme the 350-hp. motor pulled 258 kw., or 345 hp., and produced 277,000 cu.ft. of air per minute against a water gage of 4.8 in., thus showing an over-all efficiency of fan and motor combined of 65.1 per cent. Allowing the motor its guaranteed efficiency of 92 per cent, this shows 70.8-per cent efficiency for the fan alone. On this fan no experiments were made with the stack closed, as the trials conducted at Marianna were considered sufficiently conclusive.

Fan Gets Up to Speed in Half Minute

The clutches provided for both of these installations have a time element of 90 seconds. Experiment has proved, however, that this period is not required to bring the fan up to speed, and the setting has been gradually reduced to between 25 and 30 seconds. The graphic chart taken with the Exterline meter shows a smooth curve, and no jerk on the fan is noticeable.

In conclusion it should be stated that both of these drives with their clutches have been operating for the past six months with no delays chargeable to electrical trouble. It seems reasonable to assume that this opens a large field for the synchronous motor. The clutches employed are as reliable—if not more so—as the motors themselves, and by their use special machines with high pull-in torques are rendered unnecessary.

An ordinary standard synchronous motor of the proper speed will readily fulfill all requirements, and though, as has been previously stated, closing the stacks and employing high pull-in torque motors affords a degree of safety should anything unexpected happen to the clutch, nevertheless under any condition of starting without the use of the clutch it will be found that the starting peak is considerably increased.

It is acknowledged that many mining men prefer variable-speed motors for driving mine fans inasmuch as the quantity of air desired varies. For this reason objections may be raised to using direct-connected synchronous machines. With induction motors the speed can be varied by inserting resistance in the secondary

circuit. This reduces not only the speed but the power factor and the efficiency of the motor as well. With a direct-connected synchronous motor the same effect can be obtained by bulkheading or choking the fan drifts. Undoubtedly the efficiency of the unit will be somewhat reduced, but experience has shown that this loss is not as great as that incurred in getting a similar reduction in capacity by inserting resistance in the circuit of the induction motor.

Instead of using a synchronous motor with a magnetic clutch another scheme has been suggested that would virtually make the clutch a part of the motor. This could be done by so designing a motor that in starting the stator would revolve instead of the field. When this has been brought up to synchronous speed and the machine put on the line, a brake could be applied to the stator to reduce its speed gradually. As the machine would remain in step, the slowing down of the stator would cause the rotor with the fan attached to start spinning at a speed corresponding to the decrease in speed of the stator. The brake pressure would be applied gradually until the stator came to a standstill and was locked in place. The field and fan would then be rotating at synchronous speed. This scheme offers another field for development in the synchronous motor.

It was developed during the studies on blanking off the fan discharge that louvers could be so arranged on the fan stack as to permit of easy throttling of the fan load. These would possess the advantage of allowing one man to open and close the stack. A construction of this kind has since been installed by the American Blower Co., but it will be found that the starting peaks will be about the same as those obtained by the Marianna experiments conducted with the stack closed by means of cut-off doors.

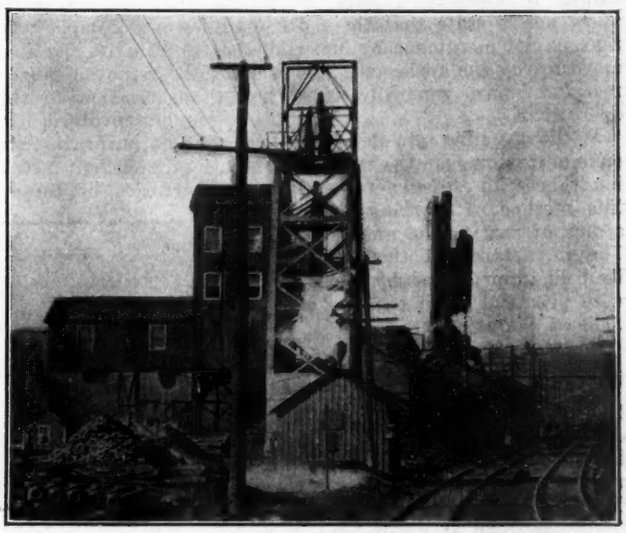
It may be interesting to note that the money expended on these two fan improvements is an excellent invest ment. For instance, the Marianna fan load of 461,000 cu.ft. against a water gage of 4.2 in. represents an expenditure in actual work done of about 305 hp. It can readily be seen that the saving of approximately 27 per cent on this amount of work actually performed is at the rate of about 60 kw. and this over a period of 720 hr. per month amounts to 43,100 kw.-hr. At 1.3c. per kilowatt-hour this represents a saving of about $575 per month in power alone.

A COMPREHENSIVE SERIES of tests on the dewatering of washed coal sludge with vacuum filters has been made at the central experiment station of the Bureau of Mines, at Urbana, Ill. These tests led to the conclusion that where the sludge is clean enough to be of fuel value and the water supply is such that reclamation of the water is important, the use of filters is practicable. During a partial survey of coal washing practice in the Birmingham district of Alabama, especial attention was given by the bureau to methods of drying in use. Data on the operation of centrifugal driers and on gravity drainage at one plant show the same resulting moisture reduction by centrifugal drying and by natural drainage in railroad cars for 24 hours.

IN UTAH AND SOUTHERN WYOMING a number of mines are operating on coal seams ranging from 14 to 60 ft. in thickness. Included in these mines are five that are heavy producers and in which the seams average approximately 26 ft. thick. Data on the methods employed in these high seams, particularly with regard to the extraction of pillars, is being gathered by the U. S. Bureau of Mines and studies are being made of the efficiency of the different systems. When the investigation is completed the material will be prepared for publication.

Inspectors Condemn Loading of More Than One Shothole at a Time

AFTER a careful inquiry into the causes of the explosion at the Gates Mine of the H. C. Frick Coke Co. the inspectors in their report declared that "they were not in sympathy with the manner in which blasting operations have been conducted in that mine and are decidedly of the opinion that the rules for blasting should be revised." This decision follows the declaration that "a well-established rule of the H. C. Frick Coke Co., looking to the prevention of the firing of shots in rapid succession, forbids the firing of more than one shot at a time, but the permission to load a number of shotholes in a working place at one time invited the very practice that the rule attempted to prevent, namely, the rapid firing of shots, and the evidence, although possibly not conclusive, as to initial point of the explosion indicates that both the company's rules regulating blasting and the law were disregarded."



GATES MINE OF H. C. FRICK COKE CO.

Twenty-five men, comprising the night force of mine workers at this mine, were killed as the result of an explosion at 1:30 a.m., Feb. 2. Most of the men were asphyxiated by the fumes and gases which the explosion developed. The explosion took place a long way from the shaft bottom.

The inspectors were of the opinion that the initial point of the explosion was at the face of No. 4 flat at No. 21 butt. "The ignition at this point was brought about in all probability by flame from an overcharged shot or shots projected into an atmosphere laden to some extent with coal dust and various combustible gases incident to a blast or blasts fired immediately preceding" and aided probably to a slight extent by gases produced by natural agencies. "The explosion thus initiated was propagated and extended by the dryness of the workings" in the neighborhood of the initial blast "and was arrested only by the dampness and cleanliness of the workings and by their expanding form in the south portion of the enclosed area." The inspectors, however, say that there is a possibility that this explosion started at some other point than that at which they have placed the origin of the explosion, but declare that the violence at the point indicated and the general trend of the forces exhibited seem to justify their conclusion that the explosion originated at the point they have indicated. In any case the firing of shots in quick succession should be avoided.

Problems of Operating Men

Edited by James T. Beard

Anthracite vs. Bituminous Stripping Operations

Steep Inclination of Anthracite Seams Not Favorable to Stripping — Old Workings Underlying Upper Seams Endanger Heavy Machines Employed—Cost of Equipment Must Be Considered

REFERRING to R. Dawson Hall's comparison of anthracite and bituminous stripping operations, contained in *Coal Age*, Jan. 19, p. 95, allow me to state that there are many reasons not mentioned by Mr. Hall that explain why the anthracite field has not resorted more generally to stripping operations.

Without going into detail, I wish to enumerate some of the more important hindrances to the general adoption of this method of working the overlying seams of coal in the anthracite region. The importance of these reasons will be fully appreciated by those familiar with practical mining in the anthracite field of Pennsylvania.

Seams Steeply Inclined

As is well known, practically all of the anthracite seams are steeply inclined. The thicker underlying seams have been very largely worked out, while the thinner seams above were left for later extraction. The removal of the overburden, in conducting stripping operations under these conditions, would involve transporting the coal and refuse material over heavy grades or planes.

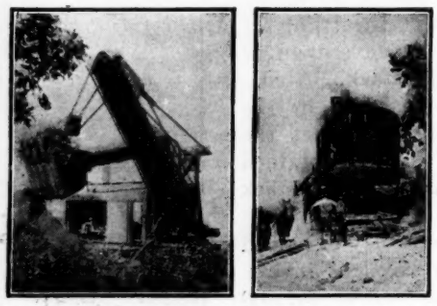
Obviously, this would be accompanied with a greatly increased expense, as compared with similar operations in the bituminous field, where the coal seams have generally little or no inclination. While there are some notable exceptions, such as Lattimer and Locust Mountain, the fact remains that there are very few virgin seams of anthracite being stripped at the present time, because of the difficulties.

Old Workings Endanger the Heavy Excavating Machines

Conducting strippings over old workings always involves extra hazards, and endangers the heavy expensive equipment employed, by reason of the open gangways and breasts, which are liable to cave and prevent the further prosecution of the work above.

The accompanying photo will afford some idea of the style and weight of the kind of equipment required in successful stripping operations. On the right of the figure is shown a 100-ton Bucyrus, 78-C, excavator being taken up a 15 per cent grade for use in the Bast stripping of the P. & P. Coal & Iron Co., near Ashland, Penn. On the left of the figure is shown the same machine in full operation, in the act of transporting a three-yard dipper full of excavated material to the waste dump.

Finally, the amount of overburden to be removed must always be considered in relation to the cost of the equipment involved. There are many profitable anthracite strippings that are not of sufficient size to pay the carrying charges of these 100-ton shovels and



BUCYRUS 78-C, TRAVELING AND AT WORK

standard gage cars and locomotives, even though it were practicable to use them on the heavy pitches and over the old workings so common in the anthracite field.

As regards the contractor, the coal companies recognize that this is a special line of work and, as such, is more efficiently handled by specialists.

J. Robert Bazley,
Contracting Mechanical Engineer.
Pottsville, Pa.

Alabama Law re Gassy Mines

Criticism of law well founded in some respects — No time specified for the fireboss' work to begin—Mark to be placed at least twenty-five feet back from the face where gas is found—This requirement in line with other state mining laws.

READING the letter of R. W. Lightburn, *Coal Age*, Feb. 2, p. 210, which I consider a just criticism of the weak points in our Alabama mining law relating to gaseous mines, afforded me no surprise. One of these points at least, has been the subject of controversy, at different times, by mining men in the state.

Attention now being drawn to the matter, in *Coal Age*, may help to bring about the needed remedy and cause the law to be amended. The chief point is the omission of any specified time for the fireboss to commence his work. While Mr. Lightburn has very properly taken strong objection to this omission in the Alabama law, I feel that he has placed undue emphasis on another point to which he refers.

Marking a Place Containing Gas

This second point relates to the marking of a place by a fireboss when he has found gas in dangerous quantity. The law requires (Sec. 32) that the fireboss shall leave a conspicuous sign or mark to indicate the presence of gas in the place. The mark must be placed in the entrance or neck of a room, or "at a point at least 25 ft. distant from the face" of a heading containing gas.

This reference, in the Alabama law, seems to be quite in line with similar references in the mining laws of Pennsylvania, Illinois, Colorado, Tennessee and other states. In each instance, the fireboss is required to place a danger mark or signal at a safe distance from the place where gas is found.

In this connection, it should be stated that the Alabama law makes 25 ft. the minimum distance that the mark is to be placed from the face of a heading. The reference made to this point, in *Coal Age*, Nov. 10, p. 769, omitted the words "at least," in naming this distance.

Special Rules at Each Mine

Reference is made, by Mr. Lightburn, to the fact that the Alabama law makes no mention of the mark that the fireboss should leave at the face of every place examined, as evidence of his presence in the place that morning. This omission seems to have been partially corrected, in the law, by requiring (Sec. 37) that special rules be adopted at each mine, covering all classes of work; such rules to be printed and posted in a conspicuous place at the mine.

It only remains for me to state, in closing, that the Alabama law (Sec. 32) requires the fireboss to inform every man as to the condition of his working place, in respect to dangerous quantities of gas, before the man enters the mine. The same section makes it a misdemeanor for any person to enter or approach any place in the mine, after he has been informed that danger exists therein.

My purpose in writing is not to bolster up the weak points of the Alabama law; but merely to show that the mine work-

er, here, has more protection under the law, than is indicated in the letter to which I have referred, although this protection is far from being satisfactory.

JOHN WALLS, SR.

Bayview, Ala.

Misconstruing the Mining Law

Three references in the bituminous mine law relating to distances apart of cut-throughs, cause some difference of opinion as to their right meaning — Care needed in reading the law.

ATTENTION has been drawn at different times, in *Coal Age*, to the careless wording of certain paragraphs of the mining law, which have led to confusion in the minds of men whose duty it is to interpret the law. But let me refer, here, to an instance where the law explains clearly, but has been misconstrued more than once through careless reading.

Only recently I have listened to the arguments of several persons who have formed a wrong idea of the meaning of the Bituminous Mine Law of Pennsylvania, in respect to the distance apart of breakthroughs in rooms and entries. I have known miners and even men holding official positions about the mines who have, through their careless reading of this law, formed the same wrong opinion.

These men all claim that the law permits the driving of butt entries, a distance of 200 ft. beyond the last breakthrough. In one or two instances, assistant foremen and firebosses have claimed that this was no violation of the law.

In vain I have tried to reason with some of these men, telling them that they had better read the law more carefully, and they will find that the maximum distance a butt heading can be driven beyond the last cut-through is 105 ft.

LAW CLEARLY SPECIFIES

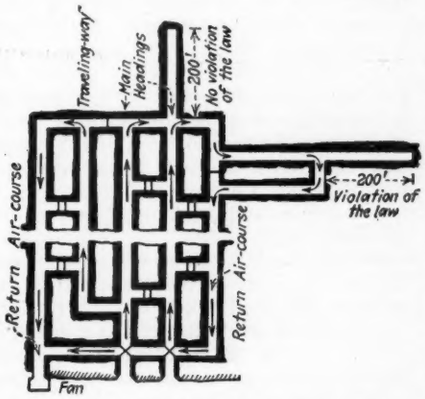
As I read the law (Art. 9, Sec. 3) it specifies plainly that cut-throughs shall be made, in all room pillars, at such distances apart as may be required by the mine inspector, "not more than 35 nor less than 16 yd. each, for the purpose of ventilaiton."

Again, (Art. 4, Sec. 2) the law makes it the duty of the mine foreman to "see that proper cut-throughs are made in the pillars of all rooms and of all entries, in accordance with Section 3 of Article 9 of this act, and that they are closed when necessary, so that the ventilating current can be conducted in sufficient quantity through the last cut-through to the face of each room and entry by means of check doors."

To my mind, these two sections of the law clearly limit the distance apart of cut-throughs in all room and entry pillars. The law makes one exception to this rule, which relates to main entries only, when these entries are driven for the purpose of exploring the strata ahead.

In referring to main entries, the law reads (Art. 6, Sec. 4), "Said entries shall be separated by pillars of coal of sufficient strength, and shall not be driven more than 200 ft. beyond the last cut-through, except for exploratory purposes."

The same section requires a new gaseous mine, in which locked safety lamps are used exclusively, to be opened by driving the main entries five abreast, if these entries are to be driven 5,000 ft. or more in length. Two of the entries must lead to the main opening and



DIAGRAMMATIC PLAN OF MINE

two to the second opening, while the fifth is to be used exclusively as a travelingway. I have prepared a sketch to illustrate what I believe is the meaning of the law in this regard.

JOSEPH NORTHOVER,
Bruceton, Pa. Assistant Foreman.

Experienced Men Perform More Dangerous Work

Failure of men to obey orders blamed to foremen — Men who disobey orders should be punished—It is always the experienced men who are called to do dangerous work.

IN discussing what constitutes a practical miner, reference has been made, incidentally, to the experienced miner being the man who is more often injured or killed. It has been assumed that years of experience make the average miner careless and disregardful of danger.

One writer has stated that, in general, miners who have had several years' experience will not listen to instructions or obey the orders given them by their foremen, while the new miner, the so called "greenhorn" seldom fails to listen to instructions given him and, for that reason, makes the safer worker and a more efficient miner.

While it is true that some miners who have worked long in the mines are apt to think that they are capable of taking care of themselves and need no instructions from the foremen, in regard to making themselves safe, I want to say that it is a mine foreman's fault if his orders are not obeyed, regardless of whether the man is an experienced miner or a greenhorn.

If a foreman finds that his orders are not obeyed he should provide a suitable penalty, or there will soon be no discipline in the mine. My judgment is that it is up to every mine foreman to see that his orders are promptly obeyed, regardless of whether or not the man is an experienced miner.

Allowing it to be true that experienced men are injured or killed more frequently than those of less experience, there is yet a reason for this. We all know that when there is dangerous work to be performed experienced men are selected for the job.

What class of men are chosen for pillar work, drawing timbers in waste places, timbering high falls or taking down a bad rock, fighting mine fires and doing other hazardous work? Would any foreman send a greenhorn to do such work?

My firm belief is that technical knowledge and training must go along with a miner's experience to make it of real value, either to himself or to his employers. Without this technical knowledge and training experience in mining or any industry is of limited value. The miner who has both will make a safer and more efficient workman.

In closing, let me repeat that it is the duty of every mine foreman to teach and train his men, disciplining the man who fails to follow his instructions. My claim is that the foreman is the responsible head of the mines.

JAMES THOMPSON.

Mayport, Pa.

Dangers to Which Mine Examiners Are Daily Exposed

Examiner must be qualified — Conditions he must meet numerous and varied — His work often underestimated by higher officials — Territory too large to examine properly in limited time.

BEING a certified mine examiner (fireboss) and mine manager (foreman), at mines in Oklahoma and Illinois where I am at present located, the discussion of the certification and qualification of these officials, appearing in *Coal Age*, has interested me deeply and I want to express a few thoughts bearing on the work of the examiner.

In the first place, the mine examiner must be qualified for his work and to do this he must study to gain a knowledge of gases, their nature, properties and behavior, that will enable him to intelligently perform his work. He must realize that the lives of many men are daily in his hands, as well as his own life and safety.

When the examiner goes down into a mine, he little knows what he will encounter before he returns to the surface. Many changes may have taken place since he last left the mine, and he must be prepared to detect these changes and judge of their effect in creating new dangers to the workmen whose lives are in his charge.

Few who have not filled the position of examiner in mines can realize what the work means to the man who undertakes to perform its duties con-

scientiously and intelligently. Alone, he enters the mine, in the early hours of the morning. It may happen that shots fired the night before, by the miners, have discharged timbers, leaving the roof ready to fall at any moment, in places he must examine.

Or, a fire may have been started by the ignition of a gas feeder, or by reason of slack or fine coal left in the gob. If not this, it may chance that a squeeze is in progress caused by miners robbing their pillars too closely, making heavy roof falls imminent and dangerous.

These and other numerous conditions and dangers the mine examiner braves as he proceeds from place to place in the examination of his section. The time is short and he must hasten in order to complete his work and report, at the shaft bottom, by the time appointed for the men to enter the mine.

Suddenly, a new danger confronts him. At the face of some dip workings, a considerable distance from the main airway, the man loses his light. For some time he has noticed that the air was bad, the ventilation slack and, now, every attempt to relight his lamp fails, He stumbles about in the dark, in a vain attempt to reach better air.

I have been there, perhaps you have. With no track to guide him out, we do not wonder that the man's hair stands up, if he has any, and his scalp seems tightly drawn above his head, while cold chills run down his back as he gropes his way back. His chances we who know, can imagine.

Truly, the training of the mine examiner fits him for assuming the higher duties of the manager. No experience could better fit a man to judge correctly the conditions and dangers to which miners and daymen are exposed; or better equip him with the knowledge of how to protect these men while at their work. All that is needed, in addition, is the ability to handle men in a way to secure the best results.

Strange as it may seem, the work of a mine examiner is too often underestimated by the higher mine officials. In many cases, his employment is only considered necessary, by them, in order to comply with the law. As a general thing, they are given too large a territory to examine properly in the appointed time.

The examiner who must run, in making his rounds, cannot be expected to discover every danger of roof and coal, make the needed tests for gas and leave his mark in each place to show that it is safe for work.

A miner coming into his place, in the morning, and finding the examiner's mark on the rib, glances hastily over the roof and seeing no cross-marks to indicate bad top, takes it for granted that everything is all right and goes to work. It may be that within a short time thereafter, the same man is caught by a fall of rock that should have been marked by the examiner had more time been given him to examine the place.

I have known examiners to go into the mine, at 3 o'clock in the morning, so as to make their rounds thoroughly and get out in time to report before the men enter for work. If more attention was given to these things, by the higher officers at our mines, I am satisfied coal companies would save money.

Edwardsville, Ill. DAVID A. YOUNG.

Inquiries Of General Interest

Mining Thin Seam With a Coal Puncher

Pick Machines or Coal Punchers Particularly Adapted to Mining Irregular Deposits on Little or No Inclination—Advantage Where Coal Contains Sulphur Balls That Forbid Machine Mining

KINDLY advise me through the columns of *Coal Age*, whether it is possible or advantageous to mine a 28-in. coal seam, using a coal puncher or pick machine. The coal is clean and contains no sulphur. The roof overlying the coal is good. Please explain the particular advantages to be obtained in the use of the pick machine.

Darlington, Pa. CARL CRAFT.

This is a fairly thin seam of apparently good coal overlaid with a good roof. The inclination of the seam is not given, but judging from the information at hand and assuming that the inclination, if any, is not sufficient to bar the use of machines, it can be stated that the conditions are ideal for machine mining, using a chain coal cutter for that purpose.

Owing to the fact that the thinness of the seam affords but limited headroom, we cannot recommend the use of a coal puncher in this case. As is well known, the puncher or pick machine is mounted on two low wheels when used for undercutting the coal.

The operator sits on a board one end of which is raised 12 or 14 in. above the floor. The inclination of the board has the effect of keeping the machine up to its work, as each blow is struck in the coal. Sitting on the board, the operator would not have sufficient headroom to work the machine, in this thin seam.

Again, the mining will have to be done in the coal, provided there is no underclay or other suitable material that can be mined with a pick. In that case, the use of a pick machine would mean the loss of too large a proportion of the coal in such a thin seam. These are two reasons why it would not be advisable to use a coal puncher in mining this coal.

The pick machine is particularly advantageous in the mining of seams of moderate thickness underlaid with a bed of fireclay in which the mining can be done without the loss of coal. The pick machine has the advantage over a chain machine whenever the bottom is irregular, or the coal or mining dirt contains sulphur balls, or where there are boulders that must be mined around, in the extraction of the coal.

This type of machine permits the cutting tool to be driven in any direction when cutting around an obstruction, or where there are faults or rolls that would bar the use of either a chain cutter or a shortwall machine.

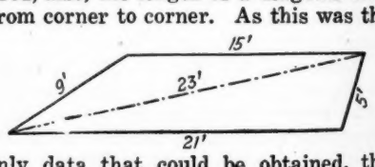
Again, the pick machine can be mounted on a post, which enables the mining to be made in a parting in the seam, at a distance above the floor. Mounting the machine on a post also makes it possible to shear the coal with the pick, which is a particular advantage in the use of this machine.

Finally, when mounted on a post set firmly between the roof and floor of the seam, it is possible to use the pick machine on inclinations where a chain machine could not be employed. These are the principal advantages of the pick machine.

Measuring the Area of a Roll in a Mine

Computing the area of a roll crossing a room — In shape, a quadrilateral— Length of each side carefully measured.

IT was necessary, recently, to measure the area of a roll that crossed one of the rooms, in our mine. The roll was in the shape of a quadrilateral, but none of its four sides were parallel. The length of each side was carefully measured, also, the length of a diagonal line, from corner to corner. As this was the



only data that could be obtained, the area bounded by these four lines had to be computed without knowing the angles formed by the figure. The lengths of the four sides were 5, 9, 15, and 21 ft.; and the length of the diagonal 23 ft., as shown in the accompanying figure.

Believing this is a problem that will interest other readers, I would like to see its solution given in *Coal Age*.

Linton, Ind. MINER.

The diagonal of a quadrilateral divides it into two triangles, the area of

which must be calculated separately and their sum will then equal the area of the quadrilateral.

To find the area of a triangle whose three sides are given the rule is: From the half-sum of the three sides, subtract each side separately. Then, find the continued product of the half-sum and the three remainders thus obtained and extract the square root of the product.

In this case, the half-sum of the three sides of one of the triangles is: ½ (9 + 15 + 23) = 23.5 ft. Then, subtracting each side, separately, from this half-sum gives the three remainders 14.5, 8.5 and 0.5. Therefore, for the area of the first triangle, we have

$$\text{Area} = \sqrt{23.5 \times 14.5 \times 8.5 \times 0.5} = 38.05 \text{ sq.ft.}$$

In like manner, the half-sum of the three sides of the other triangle is: ½ (5 + 21 + 23) = 24.5 ft. and the area of that triangle is

$$\text{Area} = \sqrt{24.5 \times 19.5 \times 3.5 \times 1.5} = 50.08 \text{ sq.ft.}$$

Finally, the sum of these two areas gives, for the area of the quadrilateral, 88.13 sq. ft.

Examination Questions Answered

Alabama Firebosses' Examination, Birmingham, Jan. 25-28, 1922

(Selected Questions)

QUESTION—*On your examination of a mine generating explosive gases you find the ventilation in good condition and no place containing any accumulation of gas; but, as you are about to admit the workmen, you discover the ventilation has been interrupted by stopping the fan or by other causes; what would be your method of procedure?*

ANSWER—The men should be notified promptly that they cannot enter the mine, until another examination has been made and the working places reported safe for work. Any interruption of the circulation, by the temporary stopping of the fan, may create a dangerous condition in one or more of the working places if the mine is generating much gas. The fireboss can take no chances, by allowing the men to enter the mine after such a temporary interruption of the circulation, but must assure himself that there is no danger.

QUESTION—*If you were acting as fireboss and had an entry driven 200 ft. ahead of the last crosscut and found during your examination that the entry contained explosive gas back 100 ft. from the face, how would you proceed?*

ANSWER—The Alabama Mining Law requires breakthroughs to be made in all room pillars at such distances apart as the mine inspector may require, not to exceed 70 ft. The law says nothing about the distance apart of crosscuts in entry pillars. In the case here mentioned, the fireboss should at once bar the entrance to the headings by a proper danger board. All the men should be withdrawn from that section of the mine before any attempt is made to remove the gas.

QUESTION—*After your examination of a mine, what evidences would there be to show that you had examined all the working places therein?*

ANSWER—The fireboss is required by law to mark the date of examination, at least 25 ft. distant from the face of each place examined, as evidence that he has examined the place and found it to be safe for work. On completing his examination of all the working places in his section of the mine, the fireboss is required to enter a full report in a book kept for that purpose at the shaft or slope bottom or the entrance to the mine. This report must state fully where any dangers have been found, give their nature and be signed by the fireboss making the examination.

QUESTION—*How often is it necessary to examine the worked-out rooms on a working entry in a very gaseous mine?*

ANSWER—The mining law makes no mention of the frequency of such examinations. All such worked-out rooms on live entries should be examined each day, if ventilated and left unsealed.

QUESTION—*What should be the first thing for you to observe, as fireboss, on entering a mine for duty?*

ANSWER—The fireboss on first entering a mine must observe that the usual quantity of air is passing in the main intake entry leading into the mine. Before going into the mine, he should have examined the fan to ascertain that it is working properly and running at its customary speed. He must also have prepared his lamp properly by examining each part thoroughly to see that it is in good condition and safe.

QUESTION—*If certain working places generated gas freely and other working places gave off little gas which would you examine first, in making your rounds in the morning, and for what reason?*

ANSWER—Assuming that the places were all in the same section of the mine and ventilated by a single current of air, the examination should start at the intake end and follow the air throughout the section, examining each place in regular order.

Again, if the places generating gas freely are in a separate section of the mine, or ventilated by another current of air from what is circulating in the places generating little gas it would be well, provided this can be done conveniently and without loss of time, to examine the places generating less gas first, leaving the examination of the section or split where more gas is generated until the last. The reason for this is that there will then less time elapse between making the examination of the gassy places and the entering of the men for work. There will then be less risk of a dangerous condition occurring from any cause, before the men reach their places.

QUESTION—*Name two different gases met with in mines, giving composition and chemical symbols of each and state where these gases are to be looked for and how detected?*

ANSWER—The two gases most commonly found in mines are methane, or marsh gas, CH_4 and carbon dioxide CO_2. Methane is composed of one atom of carbon united with four atoms of hydrogen. Its presence should be sought at the workingfaces where fresh coal is being mined and at the face of steep pitches, or in rise workings and cavities in the roof above the falls. It is detected by observing the flame of a safety lamp, to detect the first appearanec of a cap on the reduced flame of the lamp.

Carbon dioxide is composed of one atom of carbon united with two atoms of oxygen. This gas must be sought in dip workings and in the gob and other waste and void places in the mine. The gas is heavier than air and tends to accumulate at the face of dips and other low places. It is detected by the dim burning of the lamps and final extinction; also, by the headache and nausea caused by breathing air containing this gas.

QUESTION—*Are there any conditions under which it would not be safe to use a safety lamp? If so, name them.*

ANSWER—It is not safe to enter a place that has been abandoned some time and may contain dangerous quantities of carbon monoxide, alone and depending on the safety lamp to give warning of danger. When entering such a place, a person should never proceed alone, and should carry with him caged birds or mice, which become more quickly prostrated than a person. It is also possible to detect the presence of carbon monoxide by means of a special device designed for that purpose, by making frequent tests as one proceeds. It is never safe to use a safety lamp if improperly assembled, improperly handled or when containing any defect that would make possible the ignition of the gas-charged air surrounding the lamp.

Byproduct Coke Output in 1921 Declined 35 Per Cent; Beehive, 73 Per Cent

THAT byproduct coking of bituminous coal is continuing to supersede beehive coking was shown conclusively in 1921, according to the U. S. Geological Survey. This change in practice has been in progress for some years, but the first convincing demonstration that the byproduct branch of the coking industry could maintain itself in a period of industrial depression more strongly than the beehive branch was made last year.

In 1921 the output of byproduct coke was almost 20,000,000 tons and that of beehive coke was about 5,500,000 tons, figures that show a striking contrast to those for 1920, when the output of byproduct coke was more than 30,000,000 tons and that of beehive coke was more than 20,000,000 tons. The output of beehive coke in 1921 was less than that in any other year since 1885. One month of the year showed an output of only one-ninth the average monthly output in 1920. The monthly average for 1921 was only about 27 per cent of that for 1920.

The output of byproduct coke in 1921 also showed a marked decline from that of 1920, though the output in the minimum month was more than half of that in the average month of the preceding year, and the output for the entire year was practically two-thirds that in 1920. This comparison of 1921 with 1920 becomes still more striking if we remember that 1920 was easily the "banner" year in the production of byproduct coke in the United States. In other words, despite the extraordinary slump in business, which greatly lowered the output of byproduct coke, it was greater in 1921 than in any preceding year except 1917, 1918, 1919 and 1920.

The continuance of the activity in byproduct coking during a period when business was subnormal may have been due in part to the economic superiority of the byproduct ovens over the beehive ovens but it is in part due to the fact that many byproduct coke-oven plants require elaborate organization and represent large investments and must therefore be kept active in order to preserve the working force intact and prevent the undue deterioration of the plants. The loss due to the operation of such plants at less than a normal profit is smaller than that which would be incurred if they were allowed to remain idle and thus to make immense investments wholly unproductive. Furthermore, the gas produced at many byproduct coke-oven plants is sold under contract to public-utility companies that supply gas to near-by communities, so that the discontinuance of the operation of the byproduct plant would constitute a violation of its contract with the public-utility company. In view of these facts the greater production reported by the byproduct coke industry in 1921 cannot be considered a measure of the relative cost of production in beehive and byproduct ovens.

Production, by months, of each type of coke, and the output of pig iron are shown in Table I. The fluctuations in the output of coke evidently followed closely the fluctuations in the output of pig iron.

TABLE I. ESTIMATED MONTHLY PRODUCTION OF BEEHIVE AND BYPRODUCT COKE AND OF PIG IRON IN THE UNITED STATES IN 1921

Month	Beehive Coke (Net Tons)	Byproduct Coke (Net Tons)	Pig Iron (Gross Tons)a
Monthly average, 1920	1,708,000	2,569,000	3,077,000
January, 1921	1,137,000	2,278,000	2,416,000
February	865,000	1,888,000	1,937,000
March	575,000	1,772,000	1,596,000
April	328,000	1,519,000	1,193,000
May	300,000	1,590,000	1,221,000
June	232,000	1,408,000	1,065,000
July	180,000	1,297,000	865,000
August	248,000	1,383,000	954,000
September	289,000	1,423,000	986,000
October	416,000	1,734,000	1,247,000
November	477,000	1,766,000	1,415,000
December	514,000	1,860,000	1,649,000
Totals, 1921	5,561,000	19,918,000	16,544,000

(a) Figures for 1920 from American Iron and Steel Institute; those for 1921 from *The Iron Age*.

Table I shows that the lowest monthly output was made in July, when only 11 per cent as much beehive coke was produced as the average monthly output in 1920. The output of byproduct coke in July was 52 per cent of the average monthly output in 1920, and the output of pig iron in that month was 30 per cent of the average in the preceding year. Thus it is evident that the decrease in the metallurgical demand for coke had the effect of greatly reducing the operation of beehive ovens but that it caused only a relatively small decrease in the production of byproduct coke.

Production of beehive and of byproduct coke in 1920 and 1921, by states or groups of states, is summarized in Tables II and III. These summaries show clearly that the decrease in production in 1921 was very generally distributed over the country, as there was an increase in the output of coke in only one state, New Jersey, where large plants that make byproduct coke produce gas for municipal supply and cannot therefore be operated only for the production and sale of metallurgical coke. The increase in that state, however, is not sufficient to be really significant.

TABLE II. PRODUCTION OF BEEHIVE COKE, BY GROUPS OF STATES IN 1920 AND 1921
(In Net Tons)

	1920 (a)	1921 (b)	Decrease	
			Tons	Per Cent
Pennsylvania and Ohio	15,996,000	4,283,000	11,713,000	73
West Virginia	1,381,000	271,000	1,110,000	80
Alabama, Tennessee and Georgia	1,069,000	354,000	715,000	67
Virginia and Kentucky	1,300,000	374,000	926,000	71
Colorado and New Mexico	512,000	119,000	393,000	77
Washington and Utah	253,000	160,000	93,000	37
United States	20,511,000	5,561,000	14,950,000	73

(a) Final figures. (b) Estimate.

TABLE III. BYPRODUCT COKE PRODUCED IN 1920 AND 1921, BY STATES, WITH INCREASE OR DECREASE IN 1921.
(In Net Tons)

State	1920 Ovens	1920 Output (Tons)	1921 Ovens	1921 Output (Tons)	Increase (+) or Decrease (—) Tons	Per Cent
Alabama	1,081	3,123,890	1,101	2,406,000	—718,000	—23
Colorado	120	(a)	120	(a)	(a)	(a)
Illinois	794	2,136,793	894	1,326,000	—811,000	—38
Indiana	1,216	4,553,697	1,216	3,030,000	—1,524,000	—34
Kentucky	108	466,985	108	186,000	—281,000	—60
Maryland	300	682,132	360	293,000	—389,000	—57
Massachusetts	400	488,089	400	318,000	—170,000	—35
Michigan	389	1,393,445	389	778,000	—616,000	—44
Minnesota	220	674,801	220	431,000	—244,000	—36
Missouri	56	(a)	64	(a)	(a)	(a)
New Jersey	315	725,571	252	745,000	+19,000	+3
New York	732	1,040,192	732	815,000	—225,000	—22
Ohio	1,558	5,614,877	1,558	2,964,000	—2,651,000	—47
Pennsylvania	3,006	7,730,256	3,154	5,439,000	—2,291,000	—30
Rhode Island	40	(a)	40	(a)	(a)	(a)
Tennessee	24	139,121	24	58,000	—81,000	—58
Washington	20	26,284	20	21,000	—5,000	—19
West Virginia	274	447,392	274	184,000	—263,000	—59
Wisconsin	228	(a)	238	(a)	(a)	(a)
Combined states	....	1,590,426	.....	924,000	—666,000	—42
Totals	10,881	30,833,951	11,164	19,918,000	—10,916,000	—35

(a) Included in "combined states."

Two new byproduct ovens were completed and put in operation during 1921: The Chicago Byproduct Coke Co., Chicago, Ill., with 100 Koppers ovens, and the St. Louis Coke & Chemical Co., Granite City, Ill., with 80 Roberts ovens. The following companies made additions to existing plants during the past year: Woodward Iron Co., Woodward, Ala., 20 Koppers ovens; Bethlehem Steel Co., Sparrows Point, Md., 60 Koppers ovens; Laclede Gas Light Co., St. Louis, Mo., 8 Piette ovens; Camden Coke Co., Camden, N. J., 37 Koppers ovens; Cambria Steel Co., Johnstown, Pa., 88 Semet-Solvay and 60 Cambria ovens; Milwaukee Coke & Gas Co., Milwaukee, Wis., 50 Koppers ovens, making a total of 503 ovens added to existing plants in 1921.

The annual production of byproduct ovens in operation on Jan. 1, 1922, would be 44,275,000 net tons of coke if the ovens continued in operation without interruption 365 days in the year. As the average yield of coke for the industry amounts to 69.9 per cent of the coal used, this output represents a coal-carbonizing capacity of 63,340,000 net tons a year. Operation at full capacity is impossible, however, even in periods of good demand for coke, and the figures for operation at 85 or 90 per cent of full capacity really represent a normal maximum for any considerable period. In other words, the byproduct coke ovens operable Jan. 1, 1922, can treat only about 55,000,000 net tons of coal a year, yielding about 38,000,000 tons of coke.

Bids Opened for Coal for Ten Municipal Departments of New York City

TENDERS were received by the Board of Purchase of the City of New York on March 16 for furnishing and delivering to ten city departments between April 1 and June 30, 76,364 net tons of anthracite and bituminous coal and 10,784 net tons of mixed coal.

Among the bids received, just made public, were the following:

Bellevue and Allied Hospitals, barge deliveries, 4,200 net tons Buckwheat No. 2—Penn Fuel Co., $5.70; W. J. Shea, $5.29; Cullen Fuel Co., $6.19; Intercity Fuel Co., $5.45; V. H. Youngman & Co., $5.92.

Harlem Hospital, 1,100 tons No. 2 Buckwheat—Penn Fuel Co., $6.70; W. J. Shea, $6.39; Stephens Fuel Co., $6.60; Intercity Fuel Co., $6.89, and Youngman & Co., $6.95.

Fordham Hospital, 825 tons, No. 2 Buckwheat—W. J. Shea, $6.64; Stephens Fuel Co., $6.60; Intercity Fuel Co., $7.19, and Youngman & Co., $6.95.

Reformatory Prison, Hart's Island, barge delivery:

	No. 3 Buck. 381 tons	Semi-Bitu. 560 tons
Penn Fuel Co.	$5.95	$5.95
W. J. Shea	5.77	5.97
Cullen Fuel Co.	4.34	5.98
Intercity Fuel Co.	4.83	5.98
Youngman & Co.	5.20	5.92
Tuttle-Burger Corp.	....	6.28
Whitney & Kemmerer	....	5.58

W. J. Shea bid $12.33 and $12.48, respectively, for delivering 1,710 tons of egg coal and 440 tons of chestnut coal to various Fire Department buildings.

F. M. A. Leach submitted a bid of $6.22 per ton for delivering 1,625 tons of semi-bituminous coal to the various fire boats.

For furnishing and delivering 404 tons of egg coal and 151 tons of pea coal to various police stations in Manhattan, W. J. Shea bid $12.69 and $10.59, respectively, and Intercity Fuel Co. bid $12.20 and $10.15, respectively. Other bids received for deliveries to individual police stations were: Commonwealth Fuel Co., $12.90 and $10.40, respectively; W. J. Howe & Co., $12.44 and $10.25, respectively; Fleer Coal Co., $12.25 and $10.50; Elmhurst Coal Co., $12.40 and $10.25. For delivering egg and pea coal to the police stations in Staten Island the bids received were as follows: S. Haber, $12.49 and $9.98, respectively; A. A. Smith & Co., $12.15 and $10.70, and McKee Coal Co., $12.74 and $9.90.

Department of Plant and Structures:

	Astoria Ferry 720 Tons Semi-Bitu.	39th St. 5,400 Tons No. 1 Buck.	St. George 24,750 Tons No. 1 Buck.
Penn Fuel Co.	$5.97	$5.94	$6.57
Coney Island Coal Co.	6.23	7.39	....
Majestic Coal Co.	5.74	6.37	....
W. J. Shea	6.21	5.96	5.96
Commonwealth Fuel Co.	6.15	5.98	5.96
George D. Harris & Co.	5.63	....	....
Intercity Fuel Co.	6.05	6.50	6.50

	Greenpoint Ferry Brooklyn 1,620 Tons No. 1 Buck.	Broadway Ferry Brooklyn 720 Tons No. 1 Buck.	College Point Ferry 540 Tons Semi-Bitu.
Penn Fuel Co.	$6.57	$6.57	$5.97
Coney Island Coal Co.	....	....	6.23
Majestic Coal Co.	6.39	6.39	5.84
W. J. Shea	5.96	5.96	6.27
Commonwealth Fuel Co.	5.98	5.98	5.92
George D. Harris & Co.	....	....	5.68
Intercity Fuel Co.	6.50	6.50	6.08

Jerome Park Pumping Station, 820 tons each of buckwheat No. 3 and semi-bituminous—W. J. Shea, $6.13 and $7.19, respectively; Youngman & Co., $6.23 and $7.23, respectively.

Clove Pumping Station (Staten Island), 500 tons No. 1 buckwheat, and 2,000 tons No. 1 buckwheat to the Grant City Pumping Station—A. A. Smith & Co., $7.48; W. J. Shea, $7.48; Commonwealth Fuel Co., $7.53, and Youngman & Co., $7.48.

For delivering by barge to the 179th Street, Manhattan, pumping station 1,200 tons each of No. 3 buckwheat and semi-bituminous—W. J. Shea, $5.08 and $6.15, respectively; Commonwealth Fuel Co., $5.55 and $5.55, and Youngman & Co., $5.48 and $6.48.

Ridgewood Pumping Station, Brooklyn, 1,800 tons, semi-bituminous—W. J. Howe & Co., $5.79; Majestic Coal Co., $6.27; Commonwealth Fuel Co., $6.13; B. Nicoll & Co., $5.82; George D. Harris & Co., $6.08; Whitney & Kemmerer, $5.72.

Kings County Hospital, 3,715 tons of mixed coal (75 per cent buckwheat No. 3 and 25 per cent semi-bituminous slack)—W. J. Shea, $6.29; Commonwealth Fuel Co., $6.14, and Youngman & Co., $6.74.

Seaview Hospital, Staten Island, 3,750 tons mixed coal, same proportion as above—Penn Fuel Co., $7.35; W. J. Shea, $6.69; Commonwealth Fuel Co., $6.14, and Youngman & Co., $7.74.

City Hospital, barge delivery, 1,888 tons buckwheat No. 1—W. J. Shea, $5.82; Commonwealth Fuel Co., $6.03; Intercity Fuel Co., $6.26; Youngman & Co., $6.90, and Tuttle-Burger Corporation, $6.07.

For delivering 632 tons of semi-bituminous to the City Hospital; 2,050 tons semi-bituminous to Metropolitan Hospital and 1,409 tons semi-bituminous to the City Home on Blackwell's Island—Penn Fuel Co., $5.95, $6.35 and $5.95, respectively; Coney Island Coal Co., $5.46 each; Majestic Coal Co., $5.53 each; W. J. Shea, $5.87 each; Commonwealth Fuel Co., $5.93 each; George D. Harris & Co., $5.53 each; B. Nicoll & Co., $5.25 each; Intercity Fuel Co., $5.78 each; Whitney & Kemmerer, $5.41, 5.44 and $5.55; Tuttle-Burger Corporation, $6.09, $6.04 and $6.09, and Albert C. Gibson, $5.93 on second item.

Randall's Island, barge delivery, 2,934 tons mixed coal—W. J. Shea, $6.22; Commonwealth Fuel Co., $4.87, and Youngman & Co., $6.85.

	Willard Parker Hospital 1,500 Tons No. 2 Buck.	Riverside Hospital 1,500 Tons No. 2 Buck.
W. J. Shea	$5.39	$5.56
Intercity Fuel Co.	5.84	....
Youngman & Co.	6.23	7.22

Health Department Building, Otisville, N. Y., 1,000 tons of stove coal—L. R. Wallace, $11.90, and Commonwealth Fuel Co., $10.09.

January Smokeless Output 140,543 Tons Less Than a Year Ago

PRODUCTION of West Virginia smokeless coals during January, 1922, totaled 2,687,432 net tons, which was 140,543 tons less than the total for the corresponding month of 1921. Winding Gulf was the only one of the four districts to register an increase in tonnage over the previous January, the gain being 87,662 tons. The decrease in production in the other three smokeless districts was as follows: Pocahontas, 132,760 tons; New River, 87,540 tons; Tug River, 7,905 tons. The output by districts was as follows, in net tons:

District	January, 1922	January, 1921
Pocahontas	1,281,380	1,414,140
Winding Gulf	584,182	496,520
New River	450,600	538,140
Tug River	371,270	379,175
Totals	2,687,432	2,827,975

Shipments of smokeless by the Norfolk & Western R.R. during January last amounted to 1,652,650 net tons; by the Chesapeake & Ohio Ry., 553,520 tons; Virginia Ry., 481,262 tons. These three railroads moved the following total coal tonnage by districts during January, 1922:

NORFOLK & WESTERN RY.	
Pocahontas District	1,281,380
Tug River District	371,270
Thacker District	381,620
Clinch Valley District	109,670
Kenova District	97,270
Total	2,241,210
CHESAPEAKE & OHIO RY.	
Logan District	1,065,830
New River District	553,520
Winding Gulf District	180,980
Kanawha District	175,770
Coal River District	128,720
Kentucky District	292,860
Total	2,397,680
VIRGINIAN RY.	
Winding Gulf District	403,202
New River District	78,060
High Volatile District	24,039
Total	505,301

Union Must Pay for Loss of Work Incurred By Member Suspended for Breach of Rules

THE first Circuit Court decision in the history of West Virginia mining involving the liability of a local union for damages for the suspension of a member has been handed down in the Circuit Court of Harrison County, in the case of E. H. Cubbons against the Lauralee Mine Local of Lumberport, W. Va., the plaintiff in this case receiving judgment for $187 and costs.

The case came before Circuit Judge Haymond on an appeal from a decision of a justice of the peace. Cubbons, an employee of the Hutchinson Coal Co., is said to have violated a union rule and was fined twice by his local and for the third alleged violation he was suspended. Following his suspension the mine superintendent was notified not to permit him to work any longer. The subdistrict board found that the local had gone beyond its authority in his suspension and though it ordered that the local reinstate him, it nevertheless fined him $15. After failing to obtain any redress from the subdistrict board he entered suit.

Illinois Miners' Wages Double Those of Non-Union Eastern Competing Fields

THE tremendous advantage in wages enjoyed by Eastern and Southern coal mines with which Illinois must compete for business is shown in a table just issued by Dr. F. C. Honnold, secretary of the Illinois Coal Operators' Association, Chicago, Ill. The wages in effect in Illinois up to April 1 averaged almost 100 per cent higher than the average of all the other fields in the comparison. The mean level for all rates except pick mining was 42.48c. for the Eastern fields as opposed to 81.26c. for Illinois, and this does not include the additional allowance which Illinois loaders in entries got for each yard such entry work was driven. The pick mining rate for Illinois was $1.08 per ton, mine-run basis, while Alabama paid from 50 to 74c., Harlan, Ky., paid 61c., and northeastern Kentucky, 55c.

The table makes plain one of the reasons why non-union coal has been able to go into the Midwest region during the past winter and sell at prices sometimes more than $1 under the rock bottom for local coal. It is hardly possible, however, that the difference in wages alone can explain why some Pocahontas mine-run coal sold in Chicago just after the middle of March for $1.05 f.o.b. mines. That can be more easily explained by the fact that some Eastern producers overshipped to the Chicago market and had to unload. However, current quotations of $1.40 were common during the winter and early spring while southern Illinois mine-run was offered in competition at $2.25@$2.75 and went at a loss when those prices were shaded in order to move the coal.

Some facts about probable production and demand during the strike are set forth in a memorandum attached to the wage table. From various mines which will continue to work uninterruptedly after April 1 and where labor wage scales are approximately identical with those given in the table, the weekly output, as estimated by the U. S. Department of Commerce, will be 4,000,000 tons, though various expert estimates set the figure at from 1,000,000 to 2,000,000 tons above that.

On the basis of an estimated normal consumption of 500,000,000 tons a year, the memorandum points out that the country's weekly requirements would be about 9,500,000 tons. Since it was estimated that there were 54,000,000 tons of coal above ground in storage when the table was issued, March 23, it was further pointed out that the country was supplied with only six weeks' normal supply of fuel or about 10 weeks' supply based on the present rate of consumption.

February Mine Fatalities Higher in Number And Ratio to Output Than Last Year

FATALITIES during February, 1922, in and about the coal mines of the United States, according to reports received by the Bureau of Mines from the various state mine inspectors, totaled 210, as compared with 160 killed in February, 1921, an increase of 50 fatalities, or about 31 per cent. Based upon an estimated output of 48,023,000 net tons in February, 1922, the fatality rate is 4.37 per million tons produced. The corresponding rate for February, 1921, was 4.15 and the production of coal was 38,552,000 tons. The production of coal during February, 1922, represents an increase of 25 per cent.

The average number of lives lost during February of each year from 1913 to 1921 has been 184. The production of coal has averaged 43,814,000 tons, showing a fatality rate of 4.20 per million tons as representative of the month of February for the past nine years.

During the first two months of the present year 364 men have been killed by accidents at coal mines against 357 killed during the corresponding months of 1921, an increase of 7 fatalities, or 2 per cent. The output of coal for the same months was 91,973,000 net tons in 1922 and 86,232,000 tons in 1921, an increase during the present year of 5,741,000 tons, or 7 per cent. These figures represent a fatality rate of 3.96 per million tons mined in 1922 and 4.14 in 1921.

On Feb. 2 nine men were killed by a gas explosion, due to open light, at the Belle Ellen Mine No. 2, at Belle Ellen, Ala., and on the same date 25 men were killed by a coal-dust explosion, due to shot, at Gates Mine No. 2, near Brownsville, Pa. On Feb. 7 nine men were killed by a coal-dust explosion, due to shot, at the Frick mine, at Pinson Fork, Ky.

COAL-MINE FATALITIES DURING FEBRUARY, 1922, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground													Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total	1922	1921
Alabama	2			9		1		1					13													13	11
Alaska																										0	0
Arkansas																										0	1
Colorado		2	2										4						1						1	5	8
Illinois	7		5	1									13	1		1		2								15	21
Indiana	2		2					1					5													5	10
Iowa	1												1													1	0
Kansas																								1	1	1	1
Kentucky	7		1		9							1	18													18	9
Maryland																										0	0
Michigan																										0	0
Missouri	2												2													2	1
Montana																										0	0
New Mexico																										0	0
North Dakota	1												1													1	1
Ohio	7		3									1	11													11	10
Oklahoma						3							3													3	0
Pennsylvania (bituminous)	11	2	9		25	1		1	1	1			51			1		1					1		1	53	20
South Dakota																										0	0
Tennessee	5		1					1					7													7	1
Texas																										0	0
Utah		1	1										2													2	2
Virginia	2											1	3													3	4
Washington								1					1													1	0
West Virginia	19	2	9			1		1					32	1				1	1					1	2	35	23
Wyoming																										0	1
Total (bituminous)	66	7	33	10	34	6		6	1	1		3	167	2		1	1	4	2				1	2	5	176	124
Pennsylvania (anthracite)	10	2	8	3		2		1				4	30			1		1			3				3	34	36
Total, February, 1922	76	9	41	13	34	8		7	1	1		7	197	2		2	1	5	2		3		1	2	8	210	
Total, February, 1921	68	8	30	8	7	8		5	1	3		8	146			1		1	4		1		3	5	13		160

Illinois Miner-Operator Conference Yields Nothing; Farrington Helpless

BY E. W. DAVIDSON

THE heralded conference of Illinois coal-mine operators and union miners was held in Chicago Wednesday, March 29. The executive committee of the three operators' associations and of the state miners' organization were there. They talked hesitantly an hour. They adjourned. That is the complete story of the meeting. The result was simply nothing. No move was made and no word spoken that could fairly be said to presage a wage settlement in Illinois. So Illinois mines closed down with the rest of those in the land affected by the strike of midnight March 31, and the deadlock continues.

The conference was in reality Frank Farrington's party. The request for it came from the Illinois mine-union president after he had stood up in the Cleveland meeting of the International union's policy committee a week earlier and declared he would try to make a separate wage agreement for Illinois as soon as the strike showed signs of weakening. Then, fulfilling his promise to the operators to meet with them before the strike, he marshaled the executive committee of his state organization and went to Chicago Wednesday. There was no official announcement of what took place behind the closed doors of that conference. The operators took the position that it was Farrington's meeting and that therefore he should say whatever he thought best about it. He said next to nothing about it.

The main events of the meeting were said to be these: (1) Farrington apologetically told the operators he could make no separate state agreement with them under any conditions because the International had decided against it and Illinois proposed to stick to the International. (2) The operators said they were sorry. (3) Farrington said he knew the miners' position was indefensible but that he had to maintain it until "an emergency arises." (4) The operators wanted to know what constituted an "emergency." (5) They did not learn. (6) Farrington reiterated his frequently made statement that although Illinois miners must strike with the rest they do it without bitterness toward the operators, and they hoped the time would come when they could meet the operators with the idea of making a new wage scale. (7) The operators said they would be glad to have him tell them when he is ready. (8) Adjournment.

A statement of the situation as it stood following the conference was issued by Dr. F. C. Honnold of the Illinois Coal Operators' Association. Here it is:

> The public will doubtless feel, as do the Illinois coal operators, that it is impossible to justify any further delay on the part of the miners in making a start toward the negotiation of a new wage agreement for the continuation of mine operation in Illinois. The Illinois miners' officials, however, still insist on the maintenance of the policy laid down by their national organization, which in turn demands that as a first consideration and before any further steps may be taken looking to negotiations, in any state, their precise wish shall be complied with as to the proper method to pursue.
>
> It is frankly admitted by the miners that Illinois coal operators have met promptly and fully every obligation, moral or otherwise, as well as every expressed wish of the national and state mine-workers' organizations, but regardless of all this and of the further fact that Illinois produces almost one-half of the output of the so-called Central Competitive Field; one-sixth of the total bituminous output of the entire country, and employs approximately one-fifth of the entire membership of the United Mine Workers, there can be no negotiations commenced in this state because certain other coal-producing districts have not felt warranted in agreeing to continue the so-called four-state conference method of negotiating.
>
> While holding no brief for the Pittsburgh and Ohio operators, whose combined annual output is only approximately two-thirds that of Illinois, we do not feel that any argument over their alleged violation of moral obligation justifies penalization of Illinois operators or the embarrassment of other districts and the public generally, and particularly in view of the fact that it is entirely understood by all that such a meeting would at best be an idle gesture and would in no manner change the situation which now confronts us.
>
> The big outstanding feature in the coal-mine labor situation today is that, regardless of any expense or inconvenience to the coal industry or the general public, the organized section of the mine labor of the country is arbitrarily demanding that its exact wish in the matter of mere procedure shall be fully and precisely met, entirely neglecting to remember that the major matter of concern to everyone is the prompt establishment of a basis upon which mine operation may continue so that as rapidly as may be possible every embarrassment to business revival may be removed.
>
> Illinois coal mines must have a competitive contract and wage scale. Such a contract must and will come, either by negotiation or economic attrition. This is not the threat of any employing group but the mere statement of an economic fact. If as a result of the refusal of Illinois miners to take such fair wages as will permit competitive movement of their product in the common market, Illinois mine operation must stop or be curtailed, and the ultimate appreciation of their present folly will none the less reach the miners with definite certainty.
>
> That 90,000 Illinois miners will be idle and their dependents denied possible comforts or necessities, and that the $250,000,000 invested in the producing coal industry of the state is compelled to close down next Friday night is absolutely not occasioned by Illinois coal operators. It is simply another manifestation of the exercise of the so-called economic power of organized labor, expressed through a strike or refusal to work, in order that their absolute dictum may be enforced.
>
> The closed shop in the Illinois coal industry is a matter of statutory provision. All organized union labor in the country does not exceed 10 per cent of the total working force.

No effort is to be made in Illinois to run mines there in defiance of the striking union miners. Under the law no man can work in the mines without a competency certificate and two years' experience underground. The hundreds of jobless men who are applying at mines and operators' associations therefore cannot be used, even though union mines in other states may go back to operation.

The miners of every one of the 1,035 Illinois mines that operated up to the last day of March left their work at the appointed time, taking their tools with them. There was no disturbance reported anywhere in the state. All tools were removed because the operators had given notice that they would not be responsible for any miner's property during the strike.

The very day the men quit Frank Farrington, Illinois union president, issued a statement warning his 90,000 men against certain inflammatory propaganda just then appearing in the southern counties of the state. Many miners affected to believe that this "red" literature was written and distributed by agents for operators, who hoped the strikers would commit enough acts of depredation to damage their cause in the public mind.

A great many operators who have headquarters in Chicago say the strike will run all summer and that the country might as well prepare for it. There is none to prophesy any more that 30 or 45 days will see the end of it.

The only general activity on the part of the Illinois miners on April 1, the first day of the strike, was a celebration at Sesser by the men of the three southern coal counties to mark the twenty-fourth anniversary of the eight-hour day for miners. This improvement in miners' working conditions was granted by operators April 1, 1898.

Central Pennsylvania Operators Post Protest; Brophy Asks Real Federal Probe

AT a meeting of the Central Coal Association held in Altoona on March 29 a resolution was passed instructing the operators in the central Pennsylvania field to post notices at their mining operations protesting against the strike order issued by the national officers of the United Mine Workers. The notice authorized in the resolution reads as follows:

> This company notifies its employees that it protests against the injustice to our employees, to the public and to ourselves of the strike order issued by the national United Mine Workers of America without our having an opportunity to discuss a new agreement effective from April 1. We are ready to meet our employees to discuss a new arrangement at any time.
>
> Our scale agreement with the United Mine Workers of America expires on March 31, 1922. The Central Coal Association, of which this company is a member, has repeatedly requested the U. M. W. of A. of District No. 2 for a conference to negotiate a wage agreement. The U. M. W. of A. of District No. 2 have refused to meet the operators of the Central Coal Association for that purpose.

John Brophy, president of District No. 2, United Mine Workers of America, issued a statement on March 29 and also sent a telegram to Representative John Nolan, chairman of the House Committee on Labor, calling upon the people and the government to make a real probe of the mining industry. He says in his statement that there has never been a real investigation of the coal industry. He says the American government has never tried to get full data from all the coal fields.

Central Pennsylvania and Pittsburgh Owners Post Reduced Wage Scale

WHILE the Central Coal Association, composed of operators in Cambria, Clearfield, Somerset, Blair, Huntingdon and Bedford Counties, Pennsylvania, has not formulated a wage scale to offer the miners, the Association of Bituminous Operators, whose membership is made up of operators in Indiana County and counties farther west, has posted notices announcing a scale effective April 1. The notice posted points out that the United Mine Workers has refused to enter into a wage scale conference and has declared a strike in violation of the wage scale agreement.

The scale, adopted at a meeting of the bituminous operators in Philadelphia last week, abolishes the check-off and fixes the rate of pay for pick mining at 86.24c. per gross ton and 77c. per net ton. The union scale which expired on April 1 fixed a rate of $1.1431 per net ton for pick mining. Loading is placed at 50c., which replaces the union scale at 77.29c. Mule drivers and other laborers are given a rate of $4.50 per day as against 82 to 93c. per hour.

Scales Posted in Central Pennsylvania and in Pittsburgh, Effective April 1, 1922:

TONNAGE MEN

	Central Pa.	Pittsburgh
Pick mining, per gross ton	$0.8624	
Pick mining, per net ton	.77	Thin vein..$0.77 Thick vein..68
Loading, per gross ton	.56	
Loading, per net ton	.50	Thin vein...50 Thick vein..465
Cutting, per net ton, thin vein		.10
Cutting, per net ton, thick vein		.075

TIME WORKERS

(Per 8-hr. day)	Central Pa.	Pittsburgh
Cutters	$4.60	....
Scrapers	4.35	
Motormen	4.60	$4.60
Motormen helpers		4.50
Spraggers	4.50	
Skilled wiremen	4.50	4.50
Wiremen's helpers	4.25	4.25
Track layers	4.50	4.50
Track layers helpers	4.25	4.25
Bottom cagers	4.50	4.50
Drivers	4.50	4.50
Trip riders	4.50	4.50
Water and machine haulers	4.50	4.50
Timbermen (where employed)	4.50	4.50
Pipemen for compressed-air plants	4.00	4.00
Trappers	2.00	2.00
All other inside labor	4.00	4.00
Dumpers	4.00	4.00
Ram operators	4.00	4.00
Pushers	3.25	3.25
Trimmers	3.50	3.50
Car cleaners	3.25	3.25
All other outside labor	3.25	3.25

All yardage and dead work, 35 per cent below 1921 scale in the central Pennsylvania district and 30 per cent below 1921 rate in the Pittsburgh district.

Cutting and scraping where done other than by the day, 40 per cent below the 1921 scale in the central Pennsylvania district.

Car pushing, 35 per cent below the 1921 scale in the central Pennsylvania district.

Say Bank Deposits in Anthracite Region Increased 30 Per Cent in Two Years

DISCUSSION of what is a "living wage" and a "saving wage" took up most of the time devoted by the joint subcommittee of anthracite operators and mine workers in the second week of their efforts to agree upon a working agreement to take the place of the one which expired at midnight March 31.

When the conference ended on March 30, after sessions of four days, an adjournment was taken until Monday, April 3, and immediately afterward most of the miners' representatives left for their homes to see that there was no hitch in the arrangements made for the miners to quit work.

During the discussion of the demands relating to wage boosts it has been pointed out by the miners that many different rates exist throughout the anthracite districts for occupations of a similar nature and that the establishment of one rate for the same occupation would create harmony. Figures showing an increase in rents, taxes, etc., to offset any reduction in the price of foodstuffs also were presented by the miners.

The operators have not as yet indicated what they will demand in the way of a decrease in the mine workers' wages and it is said that they will not do so until after the miners' representatives have presented their arguments. The operators' representatives, it is said, have already presented statistics showing that bank deposits in the anthracite region have increased about 30 per cent in the past two years.

Operators' Position Misconstrued; Priority Applications Reach Washington

THERE is a general feeling among coal operators that their side of the labor controversy is not being presented by the daily press in a sufficiently comprehensive way to give the public a correct picture of their position. They realize that there is no intention on the part of reputable newspapers to misrepresent the situation, but it happens that the developments which appeal to the newspapers are those which, when standing alone, put the operators in a bad light. Moreover, the public does not differentiate between anthracite and bituminous coal. As a result sight is lost of the fact that the anthracite operators did meet their men in conference, and likewise the relatively high price of anthracite causes the great majority of people to overlook the fact that bituminous prices have declined greatly.

There is no great amount of public concern as to coal supply, and as a result the average person is not worrying. The fact that the buying power of no less than 550,000 men and their dependents is suddenly reduced very materially, however, is overlooked. The men now on strike represent 2 per cent of the able-bodied men of the country. This abrupt loss of buying power gives business, already sick, a jolt that it is in no position to withstand.

While the country has coal stocks sufficient to run it for nearly two months, even if no coal were mined, it is known definitely that these stocks are not evenly distributed. It is feared that once shipments from mines in union territory are suspended, it will develop that many consumers have inadequate storage facilities. Applications for priorities in transportation began reaching Washington before the strike. One large consumer wrote to Washington on the eve of the strike to the effect that his contracts were with union mines and that his plant is so situated that his current coal supply must be taken from aboard cars as needed. It is not known just how typical these cases are, but it is expected that an avalanche of complaints will be reaching Washington before the strike is two weeks old. While the operators express great confidence as to their ability to take care of distribution, there is no evidence of the machinery which will be essential to its handling.

P. W.

No Decision on Proposed Reduction in Freight Rates Before April 15

THE decision of the Interstate Commerce Commission in the matter of a general reduction in freight rates, it now appears, will not be forthcoming before April 15. At present the case is being studied by the commissioners individually. If they should find themselves in substantial accord, the decision probably could be handed down as early as April 15, but should there be important differences between them, it obviously will extend the time required for the consideration of the case.

CARS LOADED WITH REVENUE FREIGHT during the week ended March 18 totaled 823,369 compared with 829,128 during the previous week, or a loss of 5,759 cars. This was, however, an increase of 131,973 cars over the corresponding week last year, but 31,691 under the corresponding year in 1920, according to report by the American Railway Association. Coal loading declined 13,885 cars compared with the week before, the total being 190,683. Compared with the corresponding week last year this was an increase of 64,715 and 8,728 more than were loaded during the same week in 1920.

Penna Quotes Harding: "When Operators Were Willing To Meet, the Miners Balked"; Miners' Assent Tardy

Lewis, Urging Government Control of Coal Mining, Says Any Regulation Must Be Applied Equally to All Mines and Fields, Not Aimed Only at Unionized Operations

IN a letter to John Hessler, president of District 11 of the United Mine Workers of America, made public April 2, P. H. Penna, secretary-treasurer of the Indiana Bituminous Coal Operators' Association, charges the miners with insincerity in their exploitation of the refusal of certain Eastern groups of operators to join in a wage-scale conference as a part of the Central Competitive Field and reveals that the miners themselves refused to participate in such a conference when they were invited to do so by the President of the United States last October. The letter recalls that the operators met with Secretary Hoover at Washington last October and agreed to meet the miners in joint conference, with a representative of the government present. Later the officers of the United Mine Workers met with President Harding at the White House and refused his request that they meet in joint conference.

Mr. Penna charges also that soon after the contract which has just expired was signed the miners refused to abide by it and a conference of the Central Competitive Field had to be called. This, it seems, resulted in a disagreement and the matter was settled by the individual states only after the contract was revised and further increases in pay were granted. In the letter Mr. Penna says:

"Last October the operators of the Central Competitive district agreed with Secretary Hoover, at his request, that we would meet in joint conference in the Central Competitive district at an early date for the purpose of making wage scales effective on or before April 1 for the purpose of avoiding a strike at this time. We had just the same right under the resolution to ask for and agree to a meeting at that time as the United Mine Workers had to select a time later. When our agreement had been secured by the Secretary you and your associates, including national officers, were advised by President Harding in person of the desirability of such meeting and were requested by him to meet at an early date with us. You refused for reasons known to you but not to us. President Harding tersely states it in a recent statement in which he said that 'When the operators were willing to meet, the miners balked, and when the miners were ready, the operators refused.'"

Lewis Favors Government Control of Mines

John L. Lewis, president of the United Mine Workers of America, upon whose shoulders rests the responsibility of directing the nation's greatest coal strike, came out flat-footed April 2 for some form of government control of the nation's mines. He characterized as "significant" the suggestion of Senator Borah, of Idaho, that the government should operate the mines, and agreed that the suggestion was "fundamentally correct."

"I would say that some national authority over the coal-mining industry is necessary," said Mr. Lewis, "call it what you may. This does not necessarily mean government ownership, which I doubt could now be accomplished, because of the enormous amount of money that would be required to buy all of the mines and also because of the difficulty of finding a method of payment."

Mr. Lewis also indicated his approval of government control of mining by pointing out that the government already controlled the railroads through the Interstate Commerce Commission and other agencies. He insisted that any government control should compel the coal industry to care for men crippled or killed when at work, and also their dependents. He asserted that government control should also provide for a licensing system in the operation of the mines to prevent waste and eliminate haphazard mining.

"Any regulation must be applied equally to all of the mines of the country," he said. "It should not be aimed only at the now unionized mines, but should take in every field in the country, regardless of how it is now operated."

Mr. Lewis reiterated that union rail workers were not to be asked to join the miners in the strike. He said the miners' union would not be represented at the meeting of several rail union chiefs in Chicago April 3.

Confident that the suspension of coal mining in unionized fields would be effective in every mine when time for the first Monday morning whistle came, international officials of the United Mine Workers of America left the miners' headquarters in the Merchants' National Bank Building, in Indianapolis, smiling. Saturday, April 1, was celebrated as a holiday by the miners, commemorating the twenty-fourth anniversary of the inauguration of the eight-hour working day for the union coal-mine workers, and preliminary reports received at headquarters indicated that thousands of non-union miners had joined the union miners in celebrating the anniversary.

William Green, international secretary-treasurer of the United Mine Workers' organization, who announced his intention to spend the week-end and the first of next week at his home in Coshocton, Ohio, took issue with A. M. Ogle, of Terre Haute, president of the Vandalia Coal Co., in the latter's testimony in Washington April 1 before the House Labor Committee.

Colorado Not Seriously Hurt by Strike

OF 12,700 men employed in and around the mines in Colorado about 4,000 belong to the United Mine Workers union. For this reason operators do not think operations will come to a standstill under the most aggravated circumstances. Under an ordinary scheduled suspension 25 per cent of union men can be counted on to remain at work regardless of union orders, according to conclusions of operators.

Nineteen branch unions in Colorado may get into legal difficulties, if they have depended entirely on the 30-day notice necessary under the state law as sufficient grounds for cessation of work. The Colorado Industrial Commission, passing on the notices, declared that the necessary limit would not be complied with as of the date April 1.

In the bituminous field the Colorado Fuel & Iron Co., Victor-American Coal Co., Oakdale Coal Co. and the Sunnyside Coal Co. are the heaviest operators to be affected.

New York Utilities Well Stocked with Coal

PUBLIC-UTILITY corporations under the jurisdiction of the Public Service Commission of the State of New York have large reserve supplies of coal, according to reports made to the commission. Reports as of March 17 show that on an average the companies have about three months' supply of coal on hand and that this reserve is being rapidly increased.

The Consolidated Gas Co. of New York City has on hand 199,661 tons of anthracite and 287,805 tons of bituminous and its daily consumption calls for 1,574 tons of anthracite and 1,250 tons of bituminous. The reports show that the New York Edison Co. and subsidiaries has on hand 14,604 tons of anthracite and 255,994 tons of bituminous and that its daily needs are 134 tons of anthracite and 4,000 tons of bituminous.

Scotts Run Operators to Put in Effect 30-Per Cent Cut Announced Feb. 4

WHETHER their employees see fit to go to work or not, the members of the Monongahela Coal Association, comprising the owners of about 65 miles on Scotts Run and along the Monongahela River in Monongalia County, West Virginia, through their board of directors, on March 28 announced that the scale adopted at Pittsburgh, Pa., on Feb. 4 would become effective April 1, and that their mines, having an annual capacity of about 7,000,000 tons, would be operated under such scale at such a time as the mine workers saw fit to go to work. W. E. Watson, president of the association, says that the scale does not differ materially from that in effect in the non-union fields of Pennsylvania, being about 30 per cent less than the scale covered in the agreement expiring March 31, and that it gives no recognition to the check-off.

Officers of the International union as well as of District 17 have been informed of this action of the association.

World's Biggest Mines Run Mighty Race

A COLOSSAL contest of speed in blasting coal out of the earth and rushing it to the surface into railroad cars ended the night of March 31, when the miners of the land struck. In this mightiest race the coal industry ever saw Zeigler No. 1 mine of the Bell & Zoller Coal Co., at Zeigler, Ill., established the world's record for a month's hoist at 164,109 tons and its long-time rival only five miles away, Orient No. 1 of the Chicago, Wilmington & Franklin Coal Co., set the world's record for a single day's hoist at 8,218 tons.

These two mastodonic mines, with scouts watching each other across the few intervening miles of southern Illinois coal fields, exerted their herculean strength for every working day of the 27 in the month of March. Nothing interfered with the giants when they got into full stride. And the results were tremendous. They raced neck and neck all the way, first one taking the lead and then the other. Before the last loads reached the top works the evening of March 31 these two mines had literally pulverized all world's records and between them had raised 326,124 tons of coal, which filled 6,520 railroad cars—a train more than 60 miles long!

The Orient mine took the lead at the beginning of the month by digging, hoisting and dumping into cars a total of 5,645 tons. It was a big day's work as the miners judged big days at that time. The Orient held its lead the second day, increasing to 5,773 tons. By that time the men in Zeigler No. 1 were aroused. On the third day the Zeigler total was 6,073 tons. Everybody cheered—and went back to work. The Zeigler mine held the daily lead by a few tons until March 13, and on the 9th had broken the world's record with a hoist of 7,214 tons. That was considered phenomenal.

On the 14th Orient topped its rival by 20 tons for the day with a total of 6,012 tons. The very next day Zeigler nosed ahead. Then for two days Orient led. Zeigler on the 22d retaliated by breaking its own recently established world's record with 7,283 tons and held its daily edge for two days after that.

On the 25th Orient took a sporting chance, invited the town of Zeigler to come over and watch it—and then almost emptied the earth. It attained the monumental volume of 8,218 tons, which reduced all previous world's records to slack. On the 26th Zeigler led again with 5,349 and on the 27th dumped 7,537 tons through the tipple, setting its own "farthest North." Orient pushed ahead on the 29th. Its rival forged to the front on the 30th and on the last day, when miners were quitting by scores at the Zeigler property and by dozens at the other, Orient hoisted 6,235 tons and thought it was a trifling day's work. The race was over. The month's tonnages were: Zeigler, 164,109; Orient, 162,015.

Thus the coal industry saw a 27-lap race in which the world's daily record for coal hoisting was broken three times and the world's greatest monthly production—144,576 tons, hoisted by Orient in October, 1921, when the same two mines raced before—was beaten by the rival mine. Zeigler's greatest previous monthly output was 135,741 tons, in that other monthly race of October, 1921. During the contest just finished the Zeigler mine averaged 6,078 tons a day and the Orient, 400 lb. over 6,000 tons.

The records of daily production during the race are:

Date	Zeigler No. 1	Orient.
1	5,500	5,645
2	5,415	5,773
3	6,073	5,797
4	5,900	5,843
5	5,600	5,289
7	5,700	5,663
8	5,900	5,861
9	7,214	6,009
10	6,210	5,241
11	5,780	5,333
13	6,345	6,052
14	5,992	6,012
15	6,461	6,085
16	5,219	6,124
17	5,748	6,096
18	6,137	6,028
20	5,734	6,061
21	5,757	6,548
22	7,283	6,359
23	6,734	5,791
24	6,284	5,719
25	6,619	8,218
27	6,349	5,929
28	7,537	6,130
29	6,268	6,466
30	6,248	5,706
31	4,103	6,235
Totals	164,109	162,015

Editors Inspect Plants of Hudson Coal Co.

A PARTY of coal-trade paper editors were interested observers of the preparation methods of the Hudson Coal Co. March 29 on a trip through its plants as guests of the company. The party was composed of Mr. Bryan, of *Black Diamond;* Mr. Saward, of *Sawards Journal;* Mr. Hale, of the *Coal Trade Journal;* Mr. McNamara, of *Coal Trade Bulletin;* Mr. Ashmead, of *Coal Age,* and Mr. Coffey, of Ivy L. Lee and Associates.

Under the guidance of D. F. Williams, vice-president in charge of sales of the Hudson company, and assisted by Mr. Filmore and Mr. Surclift, assistant sales managers, the party was taken in automobiles from the Hotel Casey, in Scranton, to the Loree preparator at Plymouth. From there the party went to the Baltimore No. 5 colliery, at Parsons, and then proceeded to the Pine Ridge breaker and watched the loading of box cars by the tilting box-car loader built by the Ottumwa Box-Car Loader Co. From Pine Ridge the party returned to Scranton and had lunch in the restaurant conducted by the company for its office employees. After lunch the party were taken to the new Marvine preparator, just north of Scranton. This preparator has been fully decribed in *Coal Age.*

After leaving Marvine the next stop was at the storage yards at Carbondale. Here the Hudson Coal Co. has 450,000 tons of chestnut and 100,000 tons of pea coal stored. The yard was supposed to have a normal capacity of 220,000 tons but there is two and a half times as much coal in it as it was designed to handle. The party then returned to Scranton and had dinner at the Scranton Club.

The visitors were much impressed by the extremely careful preparation given the coal as well as its inspection. The details of the inspection will be discussed in an early issue of *Coal Age.*

TRADE ASSOCIATIONS ARE SHOWING alarming signs of disintegration. It is hoped some action will be taken at the meeting called by Secretary Hoover for April 12 that will check this trend. There is no great amount of confidence, however, that the government will be able to check it. Just how far the process of disintegration has gone among the coal associations will be revealed at the annual meeting of the National Coal Association the latter part of May and at the convention of the American Wholesale Coal Association early in June. It is known that the entire abandonment of these associations will be proposed at that time. While such counsel is not likely to prevail, it is feared that their support will be decreased to such an extent as to greatly impair the ability of these associations to carry on their work.

Hearing on Bland Coal Commission Bill Provides General Airing of Coal Situation

WITH the Bland bill to establish a coal commission as the vehicle, the House Committee on Labor is riding through a maze of hearings on the coal situation. Beginning March 30, the committee set out to listen to everyone with a desire to discuss the situation. The hearings, which are proving a vehicle for labor publicity and a preliminary tryout of the issues before the public, are not expected by those in close touch with affairs in Washington to result in any constructive action.

The hearings opened on Thursday with the presentation of statistics of the Department of Labor on wages of coal miners and cost of living in coal-mining regions. A delegation of churchmen followed with a plea for a government commission to settle disputes over wages. Jack Moore, representing the United Mine Workers, followed. Director Smith and Mr. Tryon, of the Geological Survey, appeared on Friday and cleared up the maze of statistical misinformation presented the day before. On Saturday A. M. Ogle, president of the Vandalia Coal Co. of Indiana, introduced the first jarring note. The committee is heavily balanced in favor of the miners and Mr. Ogle stoutly defended the operators. John Lewis appeared on Monday, April 3.

Saturday's hearing was a contentious argument on the part of Representative Bland, of Indiana, author of the pending coal bill, with A. M. Ogle of Indiana. Bituminous coal operators were defended by Mr. Ogle for their refusal to meet with the miners' union in a national wage agreement. He advanced three reasons for their refusal: Disruption of the national agreement by the miners in their Cleveland convention in September, 1920, and their negotiation of separate agreements for an increased wage over that granted by the Bituminous Coal Commission; court decisions declaring national agreements unlawful, and economic conditions produced by competition of non-union mines.

Representative Bland proved an argumentative questioner until halted by Chairman Nolan after he had monopolized the entire morning.

Ogle Says Miners Violated Wage Contract

Mr. Ogle pointed out to the committee that the U. M. W. of A., "in open and illegal violation" of the two-year contract entered into on March 30, 1920, at New York, caused the miners in the summer of 1920 to strike in Indiana, Illinois, Ohio and, in fact, in nearly every union field. The miners, he said, struck for an advance in wages beyond that fixed by the Bituminous Coal Commission and upon which the wage contract agreement, which expired at midnight, March 31, had been based.

"At a conference of miners and operators called by the U. M. W. of A. officials at Cleveland in September, 1920," Mr. Ogle went on to say, "the miners, after threshing out their wage demands, adjourned the conference *sine die*. In a subsequent statement the *United Mine Workers' Journal*, the official organ, stated that the 'interstate joint wage-movement of the miners and operators of the Central Competitive Field, which was in successful existence for so many years, was disrupted by the joint conference at Cleveland.'

"After the conference had adjourned, the U. M. W. of A. officials turned the matter of negotiation over to the miners and operators of the different fields. It was through these state agreements that the strike was ended, with the advanced wage. From this it will be seen that the miners, having officially declared that the four-state conference was 'disrupted,' recognized state agreements as the effective means of dealing with the matter.

"The miners have been quibbling about this whole wage conference matter. Apparently there is a serious misunderstanding throughout the country as to the supposed obligation on the part of the operators to meet the miners in joint conference. The resolution adopted at the time the wage contract was negotiated in New York on March 30, 1920, can be taken only as an expression of hope that the miners and operators would be able to negotiate a new contract at the end of the two-year period. It was not a binding or a legal obligation. It was not a part of the contract as written by the government commission.

"Under all circumstances such a contract as is entered into between the miners and operators could be regarded as binding only during the time of its existence and there could be nothing that would compel one side, in the case of violation of the contract by the other, to be further bound by it. The miners flagrantly violated the conditions of the contract when they struck in 1920. That was a strike against the contract written by the government. The miners felt free to break it and they did so. When it was to their advantage they did not hesitate to break the agreement and it was done all over the country."

Mr. Ogle went on to explain that the operators stand ready in every union district in the country to meet the miners in state conferences. Overtures for these state conferences made by the operators in the Central Competitive and the outlying fields, Mr. Ogle said, have been abruptly turned down by the miners' representatives acting upon orders from the U. M. W. of A. headquarters at Indianapolis.

Cites Legal Risk of Joint Wage Conference

"There is another phase of this situation that ought to be clearly understood," Mr. Ogle went on. "A number of operators in the Central Competitive districts have been indicted for having participated in joint wage conferences exactly of the nature of the conference that the miners are now insisting upon. Many of these operators have been advised by their counsel that to participate in a joint wage conference might prejudice the cases against them at Indianapolis. For that reason they have felt that it was dangerous to go into such a conference. To expect operators to enter into a joint conference in face of the advice of their own counsel that they would do so at their peril appears to be, to say the least, unreasonable.

"Aside from this phase of the situation, competitive conditions have changed within the last two years so as to make a joint wage conference of operators and miners upon which a wage scale would be negotiated, not only for the Central Competitive Field but the outlying fields, economically impracticable. Operators in Pennsylvania, Ohio, Indiana and other fields have felt the effect of lower wages and consequent lower production costs at the non-union mines, so that to enable them to produce coal at anything but a loss they must have a readjustment of wages. The majority of mines in the Central Competitive Field in the last year have operated at a loss and many of them have been closed down for a considerable period of time.

Asked by Representative Bland as to how long the reserves would last the country, Mr. Ogle replied: "I do not know that, but the country need have no concern about its coal supply. It is inconceivable that the strike may go on for such a period of time as to inconvenience the public. Long before that time arrives the miners, I am convinced, will meet the operators in the different districts and the strike will come to an end. Eventually the whole dispute must be settled in the districts, and that is what will happen."

A mass of statistics on operation of coal mines, wages, cost of living, etc., was submitted by Ethelbert Stewart, Commissioner of Labor Statistics of the Department of Labor. These included the data on the earnings of bituminous coal miners recently published as a Senate document and also similar data from the anthracite region. These data are based on investigations conducted from Oct. 1, 1921, to March 1, 1922. Average earnings in 1921 were estimated by Mr. Stewart at $1,357.40. Pick miners, working 168 days, earned $1,088.64; machine run-

WAGES, BITUMINOUS COAL MINERS

Summary for pick miners, machine miners, and loaders combined in one group.

Number of mines reporting	200
Number of pick miners, machine miners, and loaders in mines covered	33,396
Average per capita number of starts in half month covered	8.8
Number of days of operation during year ending Oct. 31, 1921, for mines covered:	
Average number of days	195.7
Highest number of days in any mine covered	310
Lowest number of days in any mine covered	71
Estimated average earnings during year, assuming each person to have worked every day of operation and to have earned as much per turn as during the pay period taken	$1,357.40

Summary of number of mines and employees, average number of starts (days), and average hours and earnings, bituminous coal mines, by occupation, 1921 and 1922.

TONNAGE WORKERS

Occupation	Number of Mines	Number of Employees	Hours: Average Hours Worked in Half Month — Average Number of Starts (Days) Made in Half Month	Hours: Average Hours Worked in Half Month — Time at Face Including Lunch	Hours: Average Hours per Start Based on — Total Time in Mine	Hours: Average Hours per Start Based on — Time at Face Including Lunch	Average Earnings — Total Time in Mine	Average Earnings — In Half Month	Average Earnings — Per Start (Day)	Average Earnings — Per Hour Based on Time at Face Including Lunch	Average Earnings — Per Hour Based on Total Time in Mine
Miners, hand or pick	127	8,429	9.2	71.9	78.4	7.8	8.5	$59.66	$6.48	$0.829	$0.761
Miners, machine	158	2,356	9.5	73.8	79.8	7.8	8.4	96.00	10.09	1.300	1.202
Loaders	176	22,611	8.6	66.2	71.4	7.7	8.3	59.65	6.91	0.901	0.835

TIME WORKERS

Occupation.	Number of mines.	Number of employees.	Average number of starts (days) made in half month (a).	Average Hours Worked in half month.	Average Hours Per start. (a)	Average Earnings In half month.	Average Earnings Per start (day). (a)	Average Earnings Per hour.
Inside:								
Brakemen	181	1,333	9.4	77.3	8.2	$60.18	$6.41	$0.779
Bratticemen	181	986	10.4	85.7	8.1	70.26	6.81	0.820
Cagers	83	185	10.3	89.4	8.6	77.82	7.53	0.871
Drivers	125	2,080	9.5	78.7	8.2	64.84	6.82	0.824
Laborers	181	2,965	9.9	80.9	8.0	56.34	5.73	0.697
Motormen	183	1,298	10.0	84.1	8.4	68.52	6.82	0.815
Pumpmen	157	452	13.0	110.2	8.5	80.90	6.24	0.734
Trackmen	198	1,393	10.7	87.3	8.2	72.05	6.77	0.826
Trappers (boys)	103	393	9.1	72.3	7.9	34.09	3.75	0.472
Other employees	188	2,295	10.9	91.3	8.3	75.46	6.97	0.826
Outside:								
Blacksmiths	191	339	11.7	102.0	8.6	87.42	7.47	0.857
Carpenters	157	427	11.1	94.7	8.4	71.23	6.42	0.752
Engineers	129	267	13.9	121.3	8.7	99.50	7.21	0.820
Firemen	79	327	13.9	117.1	8.5	87.24	6.48	0.745
Laborers	195	2,406	10.1	84.8	8.4	55.08	5.49	.....
Other employees	193	2,242	11.8	101.3	8.5	70.02	5.96	0.691

(a) Not including starts or earnings of small groups of employees whose starts were not reported, the groups comprising from 2 cagers to 237 inside laborers.

Number of mines and employees, average number of starts (days), and average hours and earnings, in bituminous coal mines, by occupation and state, for year ending Oct. 31, 1921.

TONNAGE WORKERS

State.	Number of mines.	Number of loaders, pick miners and machine miners (combined)	Average number of starts made in half month.	Number of Days of Operation During Year — Average.	Highest.	Lowest.	Estimated average earnings during year, based on days of opportunity for work.
Alabama	10	2,453	8.6	223.1	280	128	$929.88
Colorado	8	1,094	9.7	199.9	232	161	1,559.86
Illinois	22	6,539	9.3	194.3	255	107	1,709.64
Indiana	12	2,114	8.2	170.4	241	95	1,392.57
Kentucky	20	3,031	8.7	205.1	275	71	1,202.38
Ohio	25	3,520	8.8	185.0	274	87	1,417.00
Pennsylvania	44	9,252	8.9	196.9	310	95	1,197.97
Utah	4	483	5.4	177.7	231	118	1,342.16
Washington	4	319	10.5	188.4	224	118	1,687.61
West Virginia	47	4,222	8.5	193.3	291	78	1,301.43
Wyoming	4	370	10.1	226.2	287	190	2,210.93
Total	200	33,397	8.8	195.7	310	71	$1,357.40

ners, $1,695.12; loaders, $1,160.08, an average of $1,180.34 for skilled men, he stated.

Summaries from Mr. Stewart's statistical report are reproduced on this and other pages.

Mr. Stewart gave cost of living statistics for the following bituminous coal mining towns: Belleville, Pana and Herrin, Ill.; Clinton, Ind.; Nelsonville, Bellaire and New Philadelphia, Ohio; Barnesboro, Carnegie and Uniontown, Pa., and Clarksburg and Montgomery, W. Va. These figures covered 25 families in each town 206 of whom were miners' families and 53 non-miners' families.

The average income from all sources of the miners' families was $1,590.65; for non-miners' families, $1,686.11. The average total expenditures for miners' families was $1,785.86 ad for non-miners', $1,645.92. There were 76 miners' families who had an average surplus of $228 and 23 non-miners' families who had an average surplus of $284. There were 146 miners' families having a deficit averaging $312, and 22 non-miners' families a deficit of an average of $200. Of miners' families 24 had neither a surplus nor deficit and 8 non-miners' families were in the same position. The average deficit for the miners' families was $115, and of the non-miners' $40.

For 8 of these 12 cities, Mr. Stewart said, the cost of living, after allowing for increases in rents, fuel and light, had decreased 18.01 per cent from February, 1920, to March, 1922, with no decrease in union wages, although there had been decreases in non-union wages.

Representative Black, of Texas, said it was a baffling economic question, as the public was forced to pay high prices for an overdeveloped industry in order that workmen might make enough in half a year to keep them a full year and to enable the operators to earn a reasonable profit.

Director Smith, of the Geological Survey, and F. G. Tryon, its coal statistician, appeared on Friday and gave information as to stocks of coal. While coal stocks were estimated to last 43 days, Mr. Tryon said some consumers might have 100 days' supply and others less and that surplus stocks could not all be consumed before a shortage could occur. He referred to the 1920 panic caused by low stocks of coal. Anthracite stocks were given as 28 days' for the country or 39 days' for New England, while the Northwestern docks would have more coal this spring than heretofore. Mr. Tryon estimated that on April 1 the stocks could be estimated to last 51 days. Representative Bland referred to conflicting reports that mines were actively producing, anticipating the strike, while other reports showed no production. Mr. Tyron said that production had not reached the maximum of the record production in July, 1918, and before the 1919 strike, the recent highest production being 2,000,000 tons less a week than the highest previously reported. Many mines have closed down for lack of market, which he said might be termed lack of profit.

After John L. Lewis, president of the United Mine Workers, had spent practically the entire day before the committee reading a prepared statement, a few questions were asked before adjournment Monday which put Mr. Lewis on the defensive. The questions were propounded by Representative Black, of Texas, one of the few members of the committee who seems to be willing to bring out any information which might embarrass the mine workers. Not only was it brought out very clearly that the mine workers had declined repeatedly to enter district conferences but much of the effect of Mr. Lewis' carefully prepared argument for nationalization and government control was undermined when Mr. Black drew him out as to whether this is to mean governmental fixing of prices, wages and working conditions.

Strike Is Practically Complete in Union Fields; Non-Union Areas Not Affected

UNION mines in every district responded on April 1 to the strike call of President Lewis, early reports indicate. As *Coal Age* goes to press on Tuesday, telegraphic advices from all parts of the country are to the effect that non-union fields are but little affected. It should be realized that a full week must elapse and an inventory of actual production be had before the actual facts will be available.

One thing is clear at the outset and that is that there has been no general exodus of non-union workers. Here and there disaffections are disclosed in what were commonly supposed to be unorganized areas, but these are of minor importance.

West Virginia is largely non-union. Such districts as Pocahontas, Tug River, Kenova-Thacker and Logan are entirely unaffected. Winding Gulf is reported to be working 90 per cent, but New River is practically closed down.

In the Kanawha district reports vary, but show from 12 to 23 mines working. The Fairmont region, a closed-shop district, reports that of 136 mines in Harrison County, 95 mines in Marion County and 33 mines in Taylor County, a total of 264 mines, 18 were working open shop on Monday, April 3. In this region approximately 17,000 men are on strike.

In the Monongalia region from Parkers Run, W. Va., to Point Marion, Pa., no men were at work. Elsewhere in northern West Virginia there were few mines at work on Monday. Seven mines on the Morgantown & Kingwood R.R., one mine on the Cumberland division of the Baltimore & Ohio and five mines on the West Virginia Northern R.R. remained at work.

The situation in the Upper Potomac region may be briefly stated. Reductions in wages have previously been effected here. There is an agreement between the local union and the operators providing for a 90-day period after April 1 for negotiations without suspension. This is being observed and the miners are working. In Georges Creek the mines on the Big Vein are working, while those on the thin veins are closed.

The Connellsville, Uniontown and Johnstown regions, all non-union, are working, save that four mines of the H. C. Frick Co.—the Gates, Ronco, Edenborn and Lekrone properties—were closed by a strike. Somerset County and adjacent non-union districts are reported working full, with the exception of 100 men at St. Michaels.

Northeastern Kentucky is working, as is southwestern Virginia. In Tennessee about half the mines that were operating in March are closed.

Kanawha Operators Draft New Scale Embodying 30 Per Cent Wage Cut

KANAWHA coal operators on Wednesday, March 29, approved a new scale of wages, effective April 1. This scale covers eight coal-producing counties in southern West Virginia and calls for a reduction in wages of about 30 per cent.

The attitude of the operators toward the check-off is defined in notices posted at all of the 221 mines in the field on April 1, as follows: "There will be no check-off for union dues, but there shall be no discrimination against anyone belonging to a union nor against anyone not belonging to a union."

The official notice to the miners, posted at all the mines, setting forth the new rates of pay was as follows:

"The officials of the United Mine Workers having declined to meet with the Kanawha Operators Association to negotiate a contract effective after March 31, 1922, and recognizing the necessity for a scale to be effective April 1, we submit the following scale of wages to be in effect at this mine until further notice:

GAS SEAM

	Per Ton
Machine loading	43c.
Machine loading in entries	48c.
Machine cutting in rooms and entries	10c.

DAY LABOR

	Per Hour
Drivers—one mule	55c.
Drivers—two mules	57c.
Tracklayers	57c.
Tracklayer helpers	53c.
Slate shooters	54c.
Greasers, boys	29c.
Trappers, boys	29c.
Old men trappers	40c.
Spraggers and couplers	32c.
Motormen and machine runners	58c.
All other inside day labor	53c.

In reference to the demand that the Kanawha operators wait until an agreement had been reached in the Central Competitive Field, C. A. Cabell, president of the Association, in a formal statement said:

"It is all very well for the union leaders to tell the miners and operators of southern West Virginia that they must wait until after a satisfactory arrangement has been made in the Central Competitive Field concerning the rules and regulations and rates of pay under which the mines may be operated. But the operators in the Kanawha field are cognizant of the fact that they owe a duty to their workmen and to the community as a whole, in which the officers of the union at Indianapolis have not the slightest interest.

"Therefore with the old wage agreement terminating Friday night, the Kanawha Operators Association deemed it imperatively necessary to take action to provide a new scale in order that the 221 mines in this district might be in a position to produce coal, providing work for the miners who are the backbone of this community."

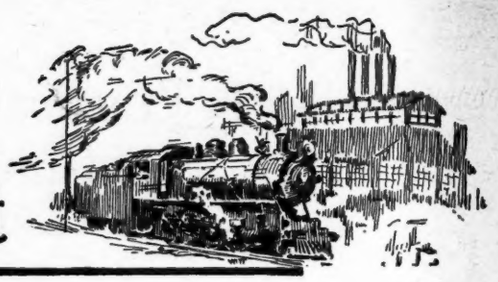
Asks Modification of Hardwood Decree

REHEARING of the open price association practice in trade or modification of the decree in the Hardwood case to permit of the collection and dissemination of production, sales and stock reports have been requested of the U. S. Supreme Court in a petition filed by the American Column & Lumber Co., the defendant in the recent suit in which the court decided the practice was illegal because in violation of the anti-trust law. The lumber interests base their request on misinterpretation of certain phases of the case, and make general denial of the conclusions of the court that the purpose of the practice employed by the lumber interests was to curtail production or enhance prices.

IN A SENATE DEBATE on the Calder resolution seeking information on bituminous coal from the Federal Trade Commission, Senator Borah, of Idaho, said he understood it called for an investigation by the commission of the cost of production, ownership of mines, profits, etc., and was under the impression that the commission already had this information, and Senator Calder understood it had most of the data. "I think they have all the information the Senator wants," Senator Borah added; "that is my opinion from my talk with them." Mr. Calder said it was his expectation that the commission would report to the Senate what information it had.

IN THE HOUSE, Representative Browne, of Wisconsin, made an extended speech criticising the operators for failing to confer with the miners and charging that 75 per cent of the entire coal industry was controlled by the railroads, banking and steel interests. He denied that the public would receive any benefit from reduced coal wages, and charged the industry with exacting exorbitant prices during the war.

Production and the Market



Weekly Review

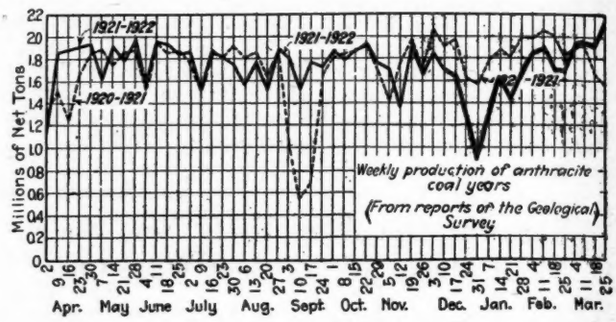
FACING an indefinite shutdown of union mines, bituminous coal production spurted late in March to the highest level attained since December, 1920. A few buyers took some additional stocking precautions on the eve of the strike. This buying movement was confined to smaller consumers who had kept out of the market recently, until at the last moment they were stirred into some action by the strike reality. Railroads, utilities and the larger steam consumers had generally filled their needs before the month came to a close and the last-minute stimulation to the demand failed to overtake the available supply, but succeeded in checking the recent decline in spot prices. *Coal Age* Index of prices stands at 171 on April 3, as compared with 170 on March 27.

Freight Rates Divide Interest With Strike

Impending freight rate changes, announcement of which is hoped for in the near future, occupied as much interest in the market last week as the strike talk. "All set for the strike" was the most common phrase heard from consumers, large and small. Industrial users refused to be budged from their deliberate attitude, reassured by the comfortable supplies on hand and the heavy non-union tonnage offering. Coal of this variety has been growing progressively more difficult to sell during the last three or four weeks and some non-union mine closings have been reported, due to lack of orders.

The bulk of the tonnage left at the mines was domestic coal, which has been practically unsalable recently, screened out to meet the comparatively lively call for small sizes. Due to its distressed position, much of this clean coal is being sold for steam purposes. Not for twenty years have Lake inquiries been so tardy. Some of this business has just appeared, but buyers are only interested in "wide-open" contracts, assuring them tonnage when it may be needed, and even now no prices have been settled for April delivery. For the season to April 1 only 4,000 cars have been moved to lower ports, as compared with 6,046 at that time last year. Practically all of this is for the account of docks having affiliated mine connections—an outlet for excess production—and is not indicative of any interest in the Lake market.

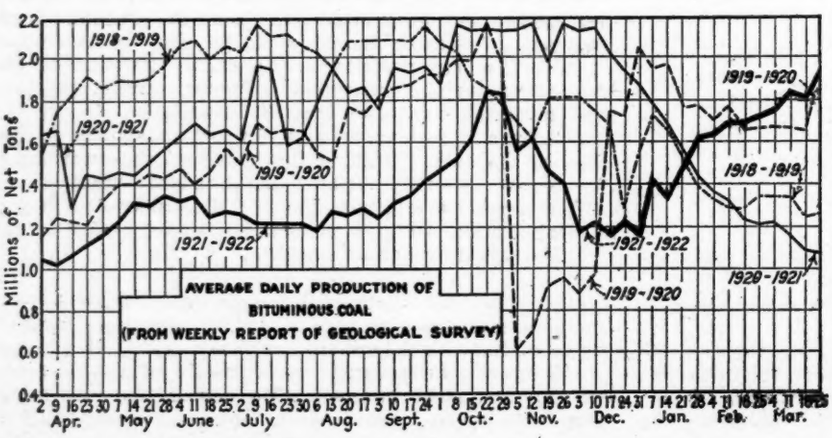
Only a slight impetus was noticeable in the anthracite market, due to fill-in orders by dealers who were desirous of taking some additional tonnage at the last moment. Retail stocks are adequate for the balance of the season, no-bills and storage piles are heavy in the hard-coal region and the strike opened with no price stimulation, either for domestic or steam grades.


1921-1922
1921-1922
1920-1921
1921-1922
Weekly production of anthracite - coal years
(From reports of the Geological Survey)
Millions of Net Tons
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

BITUMINOUS

Production reached 11,437,000 net tons in the week ended March 25, as compared with 10,846,000 tons in the preceding week. In anticipation of the strike, the output was carried nearly 400,000 tons ahead of the peak last October, when a railroad strike was threatening, and was the largest of any week since December, 1920. Reports of loadings for the first two days of the last week in March indicate that there was a further spurt in production. During the last few days prior to April 1 union mines loaded every car available and mine sidings and railroad yards are heavily laden with coal awaiting a market.

Based on the weekly figure of current needs and ship-



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended:	1921—1922	1920—1921
March 11 (*b*)	11,102,000	6,900,000
March 18 (*b*)	10,846,000	6,512,000
March 25 (*a*)	11,437,000	6,457,010
Daily average	1,906,000	1,013,000
Coal year	423,363,000	516,508,000
Daily av. coal yr.	1,410,000	1,706,000

ANTHRACITE

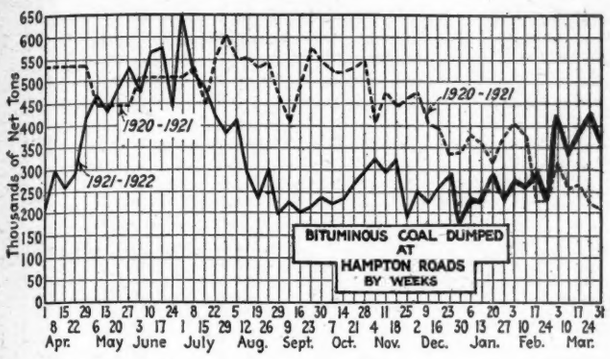
March 18	1,907,000	1,687,000
March 25 (*a*)	2,095,000	1,564,000
Coal year	85,263,000	88,722,000

COKE

	1922	1921
March 18	149,000	118,000
March 25 (*a*)	167,000	93,000
Calendar year	1,610,000	2,468,000

(*a*) Subject to revision. (*b*) Revised from last report.

ment abroad—8,300,000 tons—the week's production added at least 3,000,000 tons to consumers' stock piles, confirming the Geological Survey's forecast that coal stocks on April 1 would be around 63,000,000 tons, the amount held at the time of the armistice, which was the heaviest on record. The present reserve tonnage, however, covers a



longer period of fuel requirements, as industrial activities are much behind those prevailing at the time of the armistice. Non-union suppliers can be counted upon to fill more than 50 per cent of the country's current needs, and this tonnage augmenting the consumers' stocks removes the probability of a shortage so far into the future that it fails to become an immediate market factor.

All-rail movement to New England declined to 3,369 cars during the week ended March 25 from 4,064 cars in the preceding week. The tonnage was largely on contract, as there is only a very restricted territory for these coals, due to the good competitive position of the Hampton Roads shippers. New England is well supplied with fuel and the outlook is not bright for the coal man for some time, as current requirements have been materially reduced by the spread of the textile strike.

Hampton Roads dumpings for all accounts were 358,084 net tons during the week ended March 30, as compared with 422,420 tons in the previous week. Accumulations of coal at the piers is heavier.

ANTHRACITE

Production of hard coal increased sharply during the week ended March 25. According to the Geological Survey the output was 2,095,000 net tons, as compared with 1,907,000 tons in the preceding week. This tonnage is close to the maximum for the region.

The eve of the strike failed to produce any buying flurry, although there was a better market, due to the efforts of

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

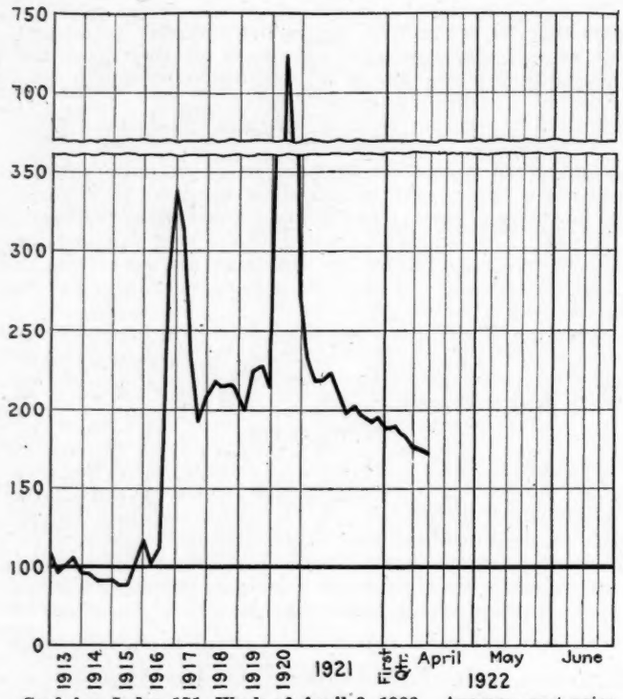
Low-Volatile, Eastern	Market Quoted	Mar. 6, 1922	Mar. 20, 1922	Mar. 27, 1922	April 3, 1922†
Pocahontas lump	Columbus	$3.20	$3.05	$2.75	**$2.90@$3.00**
Pocahontas mine run	Columbus	1.85	1.85	1.75	**1.70@ 1.95**
Pocahontas screenings	Columbus	1.35	1.15	1.25	*1.10@ 1.25*
Pocahontas lump	Chicago	3.15	3.15	2.70	*2.50@ 2.75*
Pocahontas mine run	Chicago	2.00	1.85	1.35	1.25@ 1.50
Pocahontas lump	Cincinnati	3.15	2.85	2.75	**2.75@ 3.00**
Pocahontas mine run	Cincinnati	1.75	1.70	1.70	**1.75**
Pocahontas screenings	Cincinnati	1.15	1.15	1.15	**1.25**
*Smokeless mine run	Boston	4.65	4.55	4.55	4.50@ 4.65
Clearfield mine run	Boston	1.95	1.95	1.95	1.65@ 2.25
Cambria mine run	Boston	2.45	2.45	2.45	2.25@ 2.60
Somerset mine run	Boston	1.90	1.90	1.90	1.75@ 2.00
Pool 1 (Navy Standard)	New York	3.00	2.85	2.85	2.75@ 3.00
Pool 1 (Navy Standard)	Philadelphia	3.05	3.00	2.80	2.65@ 3.00
Pool 1 (Navy Standard)	Baltimore	2.70	2.65	2.65	**2.65@ 2.75**
Pool 9 (Super. Low Vol.)	New York	2.50	2.30	2.25	2.10@ 2.40
Pool 9 (Super. Low Vol.)	Philadelphia	2.45	2.35	2.15	1.90@ 2.40
Pool 9 (Super. Low Vol.)	Baltimore	2.30	2.15	2.25	**2.25@ 2.35**
Pool 10 (H. Gr. Low Vol.)	New York	2.10	1.90	2.10	*1.85@ 2.20*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.10	2.10	1.90	1.70@ 2.10
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.15	2.10	2.15	**2.15@ 2.20**
Pool 11 (Low Vol.)	New York	1.75	1.70	1.80	1.60@ 2.00
Pool 11 (Low Vol.)	Philadelphia	1.75	1.75	1.70	**1.60@ 1.90**
Pool 11 (Low Vol)	Baltimore	1.95	2.05	2.05	**2.05@2.15**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.60	1.50	1.55	**1.50@ 1.70**
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.50	1.40	**1.40@ 1.60**
Pool 54-64 (Gas and St.)	Baltimore	1.55	1.55	1.55	**1.55@ 1.65**
Pittsburgh sc'd. Gas	Pittsburgh	2.70	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.00	1.85	1.80@ 1.90
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.50	2.30	2.30	**2.25@ 2.45**
Kanawha mine run	Columbus	1.60	1.50	1.50	*1.35@ 1.60*
Kanawha screenings	Columbus	1.30	1.45	1.35	1.30@ 1.35
W. Va. Splint lump	Cincinnati	2.25	2.15	2.15	2.00@ 2.25
W. Va. Gas lump	Cincinnati	2.00	1.85	1.95	**2.00@ 2.15**
W. Va. mine run	Cincinnati	1.35	1.40	1.35	**1.35@ 1.50**
W. Va. screenings	Cincinnati	1.30	1.30	1.30	1.25@ 1.35
Hocking lump	Columbus	2.65	2.60	2.55	2.40@ 2.70
Hocking mine run	Columbus	1.90	1.75	1.75	1.65@ 1.90
Hocking screenings	Columbus	$1.45	$1.55	$1.45	**$1.40@$1.65**
Pitts. No. 8 lump	Cleveland	3.10	2.90	2.80	*2.50@ 3.00*
Pitts. No. 8 mine run	Cleveland	2.00	1.90	1.85	*1.75@ 1.85*
Pitts. No. 8 screenings	Cleveland	1.80	1.70	1.70	*1.60@ 1.65*
Midwest					
Franklin, Ill. lump	Chicago	3.25	3.40	3.25	**3.00@ 3.65**
Franklin, Ill. mine run	Chicago	2.50	2.50	2.25	**2.25@ 2.50**
Franklin, Ill., screenings	Chicago	2.00	1.95	2.00	**1.85@ 2.25**
Central, Ill., lump	Chicago	3.00	2.80	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	2.35	2.35	2.25	2.10@ 2.40
Central, Ill., screenings	Chicago	1.75	1.75	1.85	*1.75@ 2.00*
Ind. 4th Vein lump	Chicago	3.25	3.15	3.15	3.00@ 3.25
Ind. 4th Vein mine run	Chicago	2.50	2.45	2.35	2.25@ 2.50
Ind. 4th Vein screenings	Chicago	2.15	2.00	2.15	2.00@ 2.25
Ind. 5th Vein lump	Chicago	2.80	2.80	2.85	*2.60@ 2.75*
Ind. 5th Vein mine run	Chicago	2.35	2.20	2.20	2.10@ 2.35
Ind. 5th Vein screenings	Chicago	1.65	1.60	1.75	1.65@ 1.90
Standard lump	St. Louis	2.60	2.55	2.45	**2.50@ 2.75**
Standard mine run	St. Louis	1.95	1.80	1.85	*1.75@ 1.85*
Standard screenings	St. Louis	1.10	1.10	1.35	**1.40@ 1.50**
West. Ky. lump	Louisville	2.45	2.35	2.35	2.00@ 2.25
West. Ky. mine run	Louisville	1.85	1.75	1.75	**1.75@ 1.90**
West. Ky. screenings	Louisville	1.80	1.45	1.60	**1.60@ 1.75**
South and Southwest					
Big Seam lump	Birmingham	2.60	2.60	2.10	*2.00*
Big Seam mine run	Birmingham	1.85	1.85	1.85	*1.50@ 1.90*
Big Seam (washed)	Birmingham	1.85	1.85	1.85	1.75@ 2.00
S. E. Ky. lump	Louisville	2.45	2.10	2.10	**2.15@ 2.30**
S. E. Ky. mine run	Louisville	1.55	1.60	1.55	1.50@ 1.60
S. E. Ky. screenings	Louisville	1.30	1.30	1.40	1.25@ 1.50
S. E. Ky. lump	Cincinnati	2.25	2.10	2.10	2.00@ 2.25
S. E. Ky. mine run	Cincinnati	1.40	1.45	1.30	**1.35@ 1.45**
S. E. Ky. screenings	Cincinnati	1.20	1.25	1.25	**1.25@ 1.35**
Kansas lump	Kansas City	5.00	5.00	4.50	4.00@ 5.00
Kansas mine run	Kansas City	4.00	4.00	4.00	4.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	March 20, 1922 Independent	March 20, 1922 Company	March 27, 1922 Independent	March 27, 1922 Company	April 3, 1922† Independent	April 3, 1922† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.00@$7.50	7.75@ 7.85	$7.00@$7.50	7.75@ 7.85	$7.00@$7.50	7.75@ 7.85
Egg	New York	2.61	7.35@ 7.75	7.60@ 7.75	7.60@ 7.75	7.60@ 7.75	7.60@ 7.75	7.60@ 7.75
Egg	Philadelphia	2.66	7.15@ 7.75	7.75	7.25@ 7.75	7.75	7.25@ 7.75	7.75
Egg	Chicago	5.63	*7.50	*6.90@ 7.40	*7.50	*6.95@ 7.40	*7.50	*6.95@ 7.40
Stove	New York	2.61	7.75@ 8.00	7.90@ 8.10	7.90@ 8.10	7.90@ 8.10	**7.90@ 8.20**	7.90@ 8.10
Stove	Philadelphia	2.66	7.85@ 8.15	8.05@ 8.25	7.85@ 8.15	8.05@ 8.25	7.85@ 8.15	8.05@ 8.25
Stove	Chicago	5.63	*7.75	*7.20@ 7.60	*7.75	*7.20@ 7.60	*7.75	*7.20@ 7.60
Chestnut	New York	2.61	7.85@ 8.00	7.90@ 8.10	7.90@ 8.10	7.90@ 8.10	**7.90@ 8.20**	7.90@ 8.10
Chestnut	Philadelphia	2.66	7.75@ 8.15	8.05@ 8.25	7.85@ 8.15	8.05@ 8.25	7.85@ 8.15	8.05@ 8.25
Chestnut	Chicago	5.63	*7.75	*7.20@ 7.60	*7.75	*7.20@ 7.60	*7.75	*7.20@ 7.60
Pea	New York	2.47	4.75@ 5.50	5.75@ 6.45	5.00@ 5.50	5.75@ 6.45	**5.00@ 5.75**	5.75@ 6.45
Pea	Philadelphia	2.38	4.75@ 5.00	6.15@ 6.25	5.50@ 6.00	6.15@ 6.25	5.50@ 6.00	6.15@ 6.25
Pea	Chicago	5.63	*6.00	*5.60@ 6.10	*6.10	*5.60@ 6.10	*6.10	*5.60@ 6.10
Buckwheat No. 1	New York	2.47	2.75@ 3.50	3.50	2.75@ 3.50	3.50	2.75@ 3.50	3.50
Buckwheat No. 1	Philadelphia	2.38	2.75@ 3.25	3.50	2.75@ 3.25	3.50	2.75@ 3.25	3.50
Rice	New York	2.47	2.00@ 2.60	2.50	2.00@ 2.50	2.50	2.00@ 2.50	2.50
Rice	Philadelphia	2.38	2.00@ 2.50	2.50	2.00@ 2.50	2.50	2.00@ 2.50	2.50
Barley	New York	2.47	1.50@ 1.75	1.50	1.50@ 1.85	1.50	1.50@ 1.85	1.50
Barley	Philadelphia	2.38	1.50@ 1.75	1.50	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Birdseye	New York	2.47	1.65@ 1.75	2.00@ 2.50	.....	2.00@ 2.50	.....	2.00@ 2.50

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 171, Week of April 3, 1922. Average spot price for same period, $2.06. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. The result is a series of index numbers, plotted in the above diagram.

some dealers to lay in a little additional tonnage. Producers loaded all available equipment, even though much of the coal was unsold, and storage piles were greatly reinforced during the last few days of the month.

COKE

Beehive coke production also increased during the week ended March 25. The output was 167,000 net tons, 18,000 in excess of the previous week. The improvement was due to Connellsville operators relighting many ovens, and while softening under the pressure of heavier offerings, the market absorbed the output with but little price recession.

February production of byproduct coke was 1,795,000 net tons and of beehive coke, 549,000 tons, as shown by the following table:

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Mar. 18, 1922 Inclusive	Week Ended Mar. 18
U. S. Total	45.6	54.8	60.3
Non-Union			
Alabama	63.5	62.3	74.0
Somerset County	55.5	75.4	79.0
Panhandle, W. Va.	55.3	49.4	55.9
Westmoreland	54.9	56.3	51.8
Virginia	54.8	58.3	61.3
Harlan	53.3	53.9	58.2
Hazard	51.7	60.8	52.1
Pocahontas	49.8	59.9	61.8
Tug River	48.1	63.5	71.6
Logan	47.6	60.5	59.5
Cumberland-Piedmont	46.6	50.3	56.8
Winding Gulf	45.7	63.4	70.3
Kenova-Thacker	38.2	53.5	56.1
N. E. Kentucky	32.9	45.9	52.6
New River‡	24.3	29.8	29.8
Union			
Oklahoma	63.9	60.7	66.0
Iowa	57.4	78.2	86.6
Ohio, north and central	52.6	45.3	49.3
Missouri	50.7	66.0	77.3
Illinois	44.8	53.4	58.6
Kansas	42.0	53.0	62.6
Indiana	41.4	52.7	57.4
Pittsburgh†	41.2	38.3	40.7
Central Pennsylvania	39.1	49.1	56.6
Fairmont	35.3	46.2	44.5
Western Kentucky	32.5	36.0	38.8
Pittsburgh*	30.4	29.8	36.1
Kanawha	26.0	13.5	9.6
Ohio, southern	22.9	24.4	22.7

* Rail and river mines combined.
† Rail mines.
‡ Union in 1921, non-union in 1922.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (*a*)
(Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,660,000	463,000	2,123,000
December, 1921	1,860,000	514,000	2,374,000
January, 1922	1,903,000	496,000	2,399,000
February, 1922	1,795,000	549,000	2,344,000

(*a*) Excludes screenings and breeze.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE
(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coa Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	*a* 2,385,000	*a* 731,000	3,116,000
December, 1921	*a* 2,672,000	*a* 811,000	3,483,000
January, 1922	*a* 2,735,000	*a* 782,000	3,517,000
February, 1922	*a* 2,579,000	*a* 866,000	3,445,000

(*a*) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is quoted at 41s. 3d., according to a cable to *Coal Age*, a decrease of 6d., when compared with the price quoted last week.

GERMANY—Production in the Ruhr region during the week ended March 18 was 1,955,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 1,927,000 tons.

BELGIUM—The coal market, as a result of the lack of sales, which is more accentuated each day, is still in a critical condition. Stocks are burdensome.

HOLLAND—The latest quotation on the Rotterdam market for British coal per gross ton is 15.75 gulden or 27s. c.i.f.

INDIA—The tone of the coal market is very firm. Foreign coal is coming in and mills and railways are purchasing. Stocks amount to about 40,000 tons, including British coal. Prices are: Bengal 1st., Rs. 36; Bengal good 2nd., Rs. 32; British coal, Rs. 38; African coal, Rs. 33.

SWEDEN — Although a large number of steamers are arriving at Stockholm with cargoes of coal, prices, which lately have risen considerably, are not yet falling.

FRANCE — As a consequence of the large stocks of coal now accumulated at the pit-heads, the owners of the Escarpe Mines have informed their workers that it will be necessary to enforce twenty-four hours' idleness a week. As a result of the large stocks of coal at the pit-head, miners employed at the Bert Mines, near Moulins, have been dismissed. Sufficient men have been retained to work the pumps and the machines.

EGYPT—Of the 913,081 tons imported into the Suez Canal Zone for bunkering purposes during 1921, 45,061 tons were imported by the British naval authorities, leaving a balance of 868,020 tons for merchant vessels. The 1920 imports totaled 982,364 tons, of which 113,234 tons were taken by the British naval authorities. Of the total imported for merchant vessels, American coal amounted to 157,814 gross tons in 1921 and 89,346 tons in 1920. This increase is explained by the British coal strike in the spring of 1921.

British Coal Trade Not as Seriously Affected By Engineering Strike as Expected

COAL production in Great Britain was 4,957,000 gross tons during the week ended March 18, according to a cable to *Coal Age*. This is a slight decline from the preceding week's output of 4,996,000 tons. February exports were 4,014,334 tons and 5,014,000 as originially reported to *Coal Age* and published March 23, p. 511.

The American miners' strike is bringing Canadian inquiries but quotations are rather irregular. Chilean Railways are seeking tonnage for delivery in the next six months. Under the existing schedules of dock workers, however, the rate of exporting cannot be materially increased.

The export trade in South Wales has improved considerably. The majority of the collieries are booked up at the higher prices until Easter. In spite of these improvements the industry is by no means wealthy, and the owners are still carrying losses. In fact, the owners have since last November given up about £850,000 of their profits to insure the minimum wage to the men. In January the average proceeds were 20s. 1d. per ton and the costs of production 19s. 11d.

The dispute over the docking facilities still continues and a national conference will be called. The Miners' Federation is endeavoring to introduce a system for the regulation of prices, and this proposal has the support of some of the large colliery companies, and a collective appeal has been made to salesmen to confer with the object of eliminating unnecessary price-cutting.

Various Scandinavian owners have offered large boats for the transport of coal from Britain to the U. S. with coal on the basis of freights at 12s. 6d.@15s. per ton. On the other hand British observers do not anticipate a demand for British coal unless the American strike is protracted over two or three months.

The effects of the strike in the engineering trades, or the "lockout," the designation depending on the point of view. is not having such a serious effect on the coal trade as was at first expected. In the north of England no difference is noticeable, but this is probably because the industrial demand was pretty poor anyhow. In Northumberland and Durham the collieries are nearly all on full time.

Contracts from abroad include 12,000 tons of prime gas coal for the Christiania gasworks at 22s. 10½d. f.o.b., shipment to be made during April and May. The Bordeaux gasworks has contracted for 7,000 tons special Wear gas coal for shipment next month, and the Trondhjem gasworks for 1,500 tons of the same coal also during April.

Destination of British Coal Exports, February, 1920, 1921 and 1922

Country	Gross Tons 1920	1921	1922
Russia	.....	.....	17,546
Sweden	158,153	68,566	122,272
Norway	61,402	48,275	144,252
Denmark	91,042	167,392	165,598
Germany	.....	48,909	359,889
Netherlands	32,269	106,268	336,725
Belgium	98,424	10,569	239,027
France	1,232,085	369,641	1,206,442
Portugal	24,652	30,808	47,842
Azores and Madeira	22,052	2,721	7,564
Spain	30,855	117,714	152,429
Canary Islands	28,484	2,252	27,011
Italy	310,445	310,934	319,349
Austria Hungary	5,002	.....	.....
Greece	18,075	26,028	16,061
Algeria	53,001	43,428	97,320
French West Africa	9,942	4,697	2,098
Portuguese Wes. Africa	15,368	7,265	4,184
Chile	153	479	9,526
Brazil	19,271	8,838	72,318
Uruguay	34,358	4,958	35,378
Argentine Republic	49,058	73,591	128,252
Channel Islands	9,402	14,152	19,152
Gibraltar	106,875	26,138	50,364
Malta	25,633	13,764	5,891
Egypt	74,291	53,318	134,036
Anglo-Egyptian Sudan	.....	160	.....
Aden and Depend.	.....	12,456	.....
British India	.....	13,040	120,570
Ceylon	.....	22,685	26,754
Other Countries	90,754	120,102	146,484
Total	2,601,046	1,729,148	4,014,433

British Coal Exports, February, 1920, 1921 and 1922

	Feb. Quantity (Gross Tons)	Jan.-Feb. Quantity (Gross Tons)
1920	2,601,046	5,959,618
1921	1,729,148	3,429,254
1922	4,014,334	8,035,269
	Value	
1920	£9,693,712	£21,235,849
1921	4,240,620	9,796,328
1922	4,446,225	9,229,764

Much Pre-Strike Activity at Roads

Activity at Hampton Roads was unabated last week. Business was steadily increasing, with prospects of record-breaking activity if the coal strike is prolonged any great extent.

April 1 contracts were not in evidence, many buyers preferring to take chances with the current market rather than tie up for twelve months on present prices. Dealers in many cases, expressed the same tendency.

Prices remained practically unchanged, despite increased business attendant on the impending strike. Coal was available in unlimited quantities. Movements to New England consumed the bulk of the week's shipments. Much coal was being shipped north on consignment, anticipating the strike.

Hampton Roads Pier Situation

	Week Ended March 23	March 30
N. & W. Piers, Lamberts Point:		
Cars on hand	1,407	1,588
Tons on hand	73,257	84,822
Tons dumped	158,488	153,791
Tonnage waiting	8,000	14,150
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,733	1,624
Tons on hand	86,650	81,200
Tons dumped	135,631	108,862
Tonnage waiting	11,412	30,560
C. & O. Piers, Newport News:		
Cars on hand	1,218	1,494
Tons on hand	60,900	74,700
Tons dumped	83,042	57,065
Tonnage waiting	2,985	7,625

Export Clearances, Week Ended March 30, 1922

FROM HAMPTON ROADS:

	Tons
For Atlantic Islands:	
Nor. S.S. Thorgerd, for Barbados	2,979
Am. S.S. Callabasas, for Kingston	1,302
For Argentine:	
Ital. S.S. Stromboli	7,377
Br. S.S. Elswick Park, for Bahia Blanca	5,854
Br. S.S. Novington, for Parana	4,800
For Africa:	
Br. S.S. Knight of the Garter, for Port Said	1,297
For Canada:	
Nor S.S. Svartfond, for St. Johns, N. B.	3,042
For Chile:	
Am. S.S. Cacique, for Iquique	2,040
For Dutch Guiana:	
Am. S.S. Theoline	890
Nor. S.S. Solvang, for Port Tarafa	3,289

FROM PHILADELPHIA:

For Porto Rico:
S.S. Ozama, for San Juan.....

Pier and Bunker Prices, Gross Tons

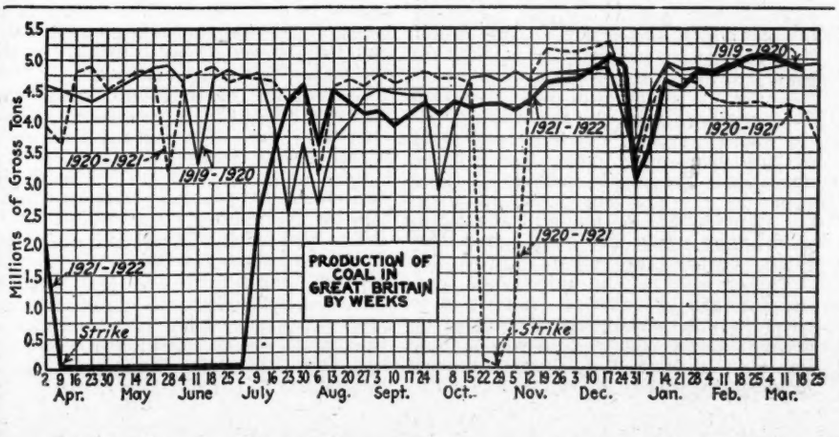
	March 25	April 1†
PIERS		
Pool 9, New York	$5.35@$5.65	$5.35@$5.65
Pool 10, New York	5.10@ 5.35	5.10@ 5.35
Pool 9, Philadelphia	5.40@ 5.70	5.40@ 5.70
Pool 10, Philadelphia	5.00@ 5.35	5.00@ 5.35
Pool 71, Philadelphia	5.55@ 5.80	5.55@ 5.80
Pool 1, Hamp. Rds	4.50@ 4.65	**4.60@ 4.70**
Pools 5-6-7 Hamp. Rds	4.30	4.30
Pool 2, Hamp. Rds	4.55	*4.45@ 4.50*
BUNKERS		
Pool 9, New York	$5.75@$6.10	$5.75@$6.10
Pool 10, New York	5.45@ 5.70	5.45@ 5.70
Pool 9, Philadelphia	5.60@ 5.85	5.60@ 5.85
Pool 10, Philadelphia	5.20@ 5.60	5.20@ 5.60
Pool 1, Hamp. Rds	4.80	**4.85**
Pool 2, Hamp. Rds	4.70	*4.60*
Welsh, Gibraltar	40s. 6d. f.o.b.	40s. 6d. f.o.b.
Welsh, Rio de Janeiro	55s. f.o.b.	55s. f.o.b.
Welsh, Lisbon	40s. f.o.b.	40s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Messina	38s. t.i.b.	38s. t.i.b.
Welsh, Algiers	37s. f.o.b.	**38s. 6d.** f.o.b.
Welsh, Pernambuco	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Bahia	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Madeira	38s. f.a.s.	38s. f.a.s.
Welsh, Teneriffe	38s. f.a.s.	38s. f.a.s.
Welsh, Malta	42s. f.o.b.	42s. f.o.b.
Welsh, Las Palmas	40s. f.a.s.	40s. f.a.s.
Welsh, Naples	38s. f.o.b.	38s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Port Said	46s. 6d. f.o.b.	46s. 6d. f.o.b.
Belgian, Antwerp	30s.	30s.
Alexandria	47s.	*45s.*
Bombay	38 rupees	38 rupees
Capetown	39s.	39s.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff :	March 25	April 1†
Admiralty, Large	27s.@27s. 6d.	27s.@27s. 6d.
Steam, Smalls	19s.@20s.	*19s.@19s. 6d.*
Newcastle:		
Best Steams	24s. 6d.	23s.@23s. 6d.
Best Gas	24s.@25s.	24s.@24s. 6d.
Best Bunkers	22s. 6d.@23s.	22s.@22s. 9d.

†Advances over previous week shown in **heavy type**; declines in *italics*.



North Atlantic

Despite Imminence of Strike Market Is Notably Quiet

Prices Fail to Rally on Spot Business—Non-Union Quotations for Delivery After Middle of April Tend Upward—Buyers Await Rate Decision.

DESPITE the eve of the strike, market conditions last week were the quietest for some time. There was no last-minute stimulation and prices refused to rally on spot business. There was an upward tendency, however, to non-union quotations for delivery after the middle of April. Indications are that a slow market is ahead, as non-union tonnage is considered nearly adequate to meet needs at the current rate of consumption.

The expected announcement of the Interstate Commerce Commission on the recent application for freight reductions has a tendency to delay coal buyers. Whatever the decision, it should help the trade, as it will settle the existing uncertainty over the freight situation.

PHILADELPHIA

Last week has been one of the dullest experienced in a long while, being something of an anomalous condition with an impending strike. Prices remained at the low level reached the previous week, with very little buying of any kind.

As yet the full effect of the suspension has not been felt and operators are not in position to estimate just what tonnage they can get out from non-union mines. Of course strong efforts will be made by the union to cut down this force and there is just a possibility that this will cause an increase in spot prices. This is strengthened by the fact that there is an undeniable improvement in the iron trade. It is now the general expectation that the steel industry in this territory will be able to operate close to full for the balance of the year.

Reports are current that the Interstate Commerce Commission will soon render its report on the recent application for a freight reduction. Many consumers are holding off further purchases awaiting this decision. Whatever the ruling it should make for better buying, as the uncertainty of freight rates will then have been removed.

BALTIMORE

So quietly was the strike inaugurated that little public interest was shown outside of the reading of the large headlines in the newspapers. There was no general rush to get coal. Prices are possibly a shade better, but this is by no means marked.

Of course, should the strike reach heavily into the non-union fields the story would be different. For the present, however, the buying public is not hurrying for additional fuel.

The export situation dating from March 11 has shown a decided improvement. Despite the fact that not a single ship cleared from Baltimore for the first ten days of the month, March showed a total export loading on cargo account of 30,468 tons. The movement was the best for 1922, as the loading for January was 19,488 tons and for February 12,584 tons.

UPPER POTOMAC

In view of the spirit of antagonism shown by an element among the miners toward any reduction in the wage scale and their efforts to prevent others from working, several companies have suspended operations for the time being, producing only a little railroad fuel. This makes little difference since there is virtually no demand. Prices are declining on Pools 9, 10 and 11.

CENTRAL PENNSYLVANIA

During the first twenty-four days of March, the field produced 61,906 carloads of coal as against 58,949 cars in the corresponding period in February. Large consumers of fuel have heavy stocks on hand so that a shut-down for a time, at least, will not affect industry.

Consumers, generally, have thus far refused to take seriously the prospect of a prolonged idleness in the mining region. There has been little or no change in prices as a result of the strike situation.

FAIRMONT

There was no marked increase in production nor was there any better sale for coal as the month closed. On the contrary many companies had finished up filling their pre-strike orders and were shut down. Railroad fuel orders constituted the bulk of production but there was no increase in that class of business. Prices were slipping during the closing days of the month. On April 1 there were 1,226 cars under load awaiting shipping instructions.

NEW YORK

There was practically no increased buying which strengthened the belief that consumers had heavily stocked up early in the year. There were about 200 cars less at the local piers on March 31 than there were on the corresponding day of the previous week and most of this was on consignment. While quotations for spot delivery ranged about as the previous week, inquiries for shipments to be made in about two weeks were sometimes quoted from 25c. to 40c. higher than current figures.

The question of non-union coals coming forward in sufficient quantities to keep the market from sky-rocketing on account of the lack of coal was a topic generally discussed. It was feared, however, by some operators and shippers of these coals that the workers might join the strikers and then there might be a different situation to meet.

There is considerable Southern coal coming into this market and handlers of Pennsylvania coals say it is being sent into New England as far north as Vermont. Those coals coming here are on contract and it was said that some of the local public utilities have closed large contracts at low figures.

Coke

BUFFALO

The market has been strong, with no large amount offering. Domestic sizes have been wanted in good volume and some increase is reported in the call for chestnut coke, which until lately has been quiet. Prices are $4.50@$4.75 for Connellsville foundry, $3.25@$3.50 for furnace and $2.85 for chestnut coke.

CONNELLSVILLE

Coke has weakened a trifle since the last report. Nearly a week ago loaded coke without destination began to appear, and it has been possible to pick up odd lots of spot at $3.25, while for any regular supply $3.50 remains the market. Rumor has it that two merchant furnaces about to blow in have bought coke, the story putting it that the furnaces wish to conceal their identity.

Operators have been turning their attention more to coke in the past three or four weeks as the coal market turned dull and not a few additional ovens have been blown in, repeatedly creating a prospect that there would be a surplus of coke, but the output has all been absorbed fairly well at $3.25@$3.50. The market is as high as it was a month ago.

Foundry coke remains quotable at $4.25@$4.75 according to brand, but there is a better selection of brands at $4.25@$4.50 than a fortnight ago. Demand has fallen off a trifle.

The *Courier* reports production during the week ended March 25 at 85,400 tons by the furnace ovens and 49,010 tons by the merchant ovens, a total of 134,410 tons, an increase of 10,390 tons.

UNIONTOWN

While an appeal has been made to non-union miners to join the walkout there is no indication that miners are interested in the industrial debate. No direct effort has been made either to appeal to the Connellsville miners or to have them join the mine union. Organizers, however, are working in the adjoining Westmoreland field.

In the face of the shutdown the H. C. Frick Coke Co. is increasing output steadily. The coke market early last week showed signs of wavering but closed the week steady. The feeler by two furnaces for coke tonnage gave tone to the market.

The coal market is soft and no broker or jobber with his "ear close to the ground" expects to see any reaction from the strike for some weeks, at least until stock piles have been diminished. Quotations are $1.30@$1.40 for Sewickley; $1.40@$1.50 for Pittsburgh steam; byproduct, $1.60@$1.75.

Anthracite

Domestic Call Gains Slightly But Market Lacks Interest

Consumers' Indifference in Marked Contrast to Previous Strikes—Storage Piles of Steam Coals at Mines Adequate for Weeks — Plenitude Holds Down Independent Prices.

DEMAND for domestic coal increased slightly last week, due to the desire of some dealers to take in a few more cars before the strike sets in. The market was devoid of interest, however, and the consumers' indifference contrasted strongly with previous pre-strike periods. Steam coals were on an even keel, as storage piles at the mines assure an adequate supply for weeks to come.

Producers were very active during the last few days of March. All available cars were loaded, whether or not orders were in hand to cover. Companies have been running heavily to storage lately and there is considerable coal available to augment dealers' supplies when needed. The plenitude of coal held down independent prices.

PHILADELPHIA

A survey of the city retail yards indicates that there is a minimum of four to six weeks supply on hand. The public has been buying lately mostly for current consumption. During the latter part of the week cold, wet weather was in evidence and buying picked up quite briskly. In addition, there were a few buyers who were stampeded into the market at the last moment.

Despite some of the indications of a slight scare, the public as a whole looks upon the mine troubles in the light of a "bluff." All operators shipped their full production during the last week, but there was not the urgency on the part of the trade that was exhibited in the previous week.

One of the large companies continues to take orders for shipment during April, subject, of course, to the usual restrictions as to strikes, etc. It has been learned it has a storage stock of about 100,000 tons of sizes larger than pea. All of the big companies have heavy stocks of pea and expect to ship from storage all summer if the strike lasts that long.

Steam sizes continue without change. There are heavy storage stocks and it is not thought there will be any increase in prices for a month or more.

BUFFALO

Some of the larger companies stopped taking on new business late in March, being unable to promise early delivery. Dealers in some cases have been paying 25c. or 50c. premium last week, as they were much in need of additional stocks and were unable to obtain them from their regular sources of supply.

It was not due to any laxness on the part of shippers that some dealers and communities are out of coal. The advice was given out several weeks ago to buy for early needs, but the skeptical dealers, who felt sure that something would happen to avert a strike, were quite anxious to fill up their bins at the last moment.

ANTHRACITE FIELDS

The foreign element among the miners is well prepared financially to withstand the suspension, but the English-speaking miner is not so well off. The retail storekeepers had their lesson during the great strike of 1902 and the whole region will go on a cash basis. This will have a tendency to shorten the suspension.

The roads have many cars on the sidings, awaiting shipment to the market. One of the large coal companies has loaded every type of car it could get. A storage yard at Carbondale that has a capacity of 220,000 tons has 450,000 tons of chestnut and 100,000 tons of pea coal in it.

BOSTON

Thus far the number of family orders for next season's supply has been relatively small, and dealers are more or less mystified to know how they are coming out with their present stocks. Warm weather a week ago slowed the inquiry, but at this writing a heavy fall of snow is giving an impetus to spot sales.

The larger distributors will have on hand enough to cover deliveries equal to those for three months during 1921, but there is no telling what tonnage will be moved between now and July 1.

The companies have now ceased accepting orders, and while there are a few cargoes yet to be shipped from New York and Philadelphia, another week will probably see a complete cessation of loading at the piers, except possibly of egg and pea from storage piles.

NEW YORK

The indifference shown by the public to the approach of April 1 was the principal feature of the situation last week. Producers had no trouble to move supplies, having been booked ahead the past few weeks, but there was no excitement.

Independent operators and shippers who have refused to book orders exceeding their output for several days back cleaned up their coal on tracks so far as possible on Friday. There was plenty of company coal around, and regular customers had no difficulty in getting their shipments. Because of this and the apparent coolness of dealers to independent coals the demand was not as active as was expected and quotations showed little difference from the previous week.

Demand for the steam coals was quiet. Everybody seems to be well supplied and there was no unexpected rush to lay in reserve stocks. There are many loaded boats of rice and barley in the harbor.

BALTIMORE

There is probably five or six weeks' reserve coal here for those who are actual consumers during that period. Dealers are telling prospective purchasers that they would not advise laying in of the usual spring stocks of coal, taking the ground that prices are now probably at peak.

The dealers are inclined to believe that the strike will not last until midsummer and that they will be able to take care of the emergency calls the late part of the summer and the fall. No move has been made to ration the stocks on hand, but dealers are advising that consumers take only what they actually need.

South

BIRMINGHAM

Market conditions are quiet. Commercial buying has received practically no impetus attributable to the walkout, consumers buying in the same leisurely manner that has characterized the market for months past. The industrial demand has been slowly improving, due to more active operations at plants in Southern territory, but as yet there has been no heavy increase in coal consumption. Industry is not yet in that position where its requirements can be anticipated far in advance, hence the spot market affords an ample supply of fuel for current use, there being no inclination to stock a reserve.

There has been some change in steam quotations, prices ranging as follows:

	Mine Run	Washed
Carbon Hill	$2.00@$2.25	$2.00@$2.25
Cahaba	1.85@ 2.25	2.00@ 2.25
Black Creek	2.00@ 2.40	2.25@ 2.50
Pratt	1.75@ 2.00	1.90@ 2.25

Domestic demand is very weak and producers are finding trouble in disposing of output, and are diverting it toward filling steam orders when obtainable. April prices range as follows:

	Lump and Egg
Carbon Hill	$2.00
Cahaba	$2.75@ 3.00
Black Creek	2.75@ 3.00
Corona	2.00
Montevallo	3.50

A heavy output is accounted for principally by the demand for railroad fuel for stocking and the large amount being coked for furnace and commercial use. There is slight probability of any serious interruption to production in the Alabama field by labor disturbances.

VIRGINIA

During the latter part of March there was a loss of 7 per cent in the output, that telling in a measure the story of market conditions in the East. The aggregate output, however, was still above 60 per cent, or approximately 125,000 tons. Domestic grades were hard to move and the steam demand slackened, with prices also on a lower level. Producers anticipate a stronger demand before the close of April.

Chicago and Midwest

Consumers Ready for Strike; Prices Firm Up at Last

Eastern Coals in Heavy Volume and Midwest Producers Plug Sidings with Loads—Cold Spell Holds Domestic Prices—Operators Welcome Chance to Clean House.

CONSUMERS are "all set" for the strike and the suspension began with buying at a low ebb. A slight cold-weather flurry of buying by dealers last week held domestic prices firm while steam grades had an upward tendency. Eastern coals continued to flow in heavily and Midwest operators produced right up to the last day, loading all available equipment. Unsold tonnage is large.

Producers welcome a chance to clear their books of this tonnage; in fact, the mines could not have run much longer with conditions as they were. The domestic user maintains an air of aloofness and the industrial buyer now has comfortable stocks on hand. This has been the quietest pre-strike market on record.

The region finished the working period with considerable coal on hand, since every mine did its level best up to the day of the strike. Many an operator declares there will be little if any of this held for a rise in price. It is hard for them to imagine anything that would cause a rise until sometime late in the summer and that is too long to hold coal already on wheels.

There was a little demand all the while for screenings at a price that stood up close to $2.25 and Western producers, feeling that they must keep out all the Eastern coal they could, tried their noblest to fill the entire demand. It wasn't such a hard job. The railroad yards were full of coal most of the time looking for buyers so that even some first-class Pocahontas had hard sledding. A few large shipments had to be unloaded at sacrifice prices. One consignment of Pocahontas mine run went at $1 which was the low record of recent years in the Midwest.

Almost everybody was willing and ready for a strike. With conditions as they were before April 1, most mines could not have run much longer on the business in sight even if there had been no strike. The coal consuming public appeared to care not a whit whether there was a walk-out or not, and buyers who really needed coal had all they could use.

Beginning in May the trade hopes for a gradual pick-up though no one thinks any union coal will be in the country by that time. If there is no settlement between operators and miners in that month, a fight for markets probably will open up. So, as the strike starts and consumers begin to shovel into their reserve piles, the selling crews are setting their minds ahead for what may happen in midsummer.

CHICAGO

A slight flurry of dealer buying was the only last-minute feature of the coal market. A good many men who had insisted to salesmen that they were fixed for a strike if it should come, plead for "a few more cars" on the last day or two of coal digging. In a few cases they did not get them. But the market generally was full of coal of almost every size and a little shopping around brought to light about any kind desired and at a fair price.

Screenings were in fair demand and the price kept well above $2. In fact, it pushed $2.25 so hard during the end of last week that a good deal of business which might have been kept in Illinois was taken by Eastern coals.

Prices on Illinois domestic sizes were steady through it all. Southern Illinois prepared sizes ranged $3@$3.65, which was an almost imperceptible improvement. Standard district prepared sold $2.65@$3 and northern Illinois was quoted $4.25@$4.50. Indiana and Pocahontas slumped slightly, however. Very little Pocahontas sold for as much as $2.75 at the end of the week.

There were no new calls from manufacturers or public utilities and about all the business of the week was centered upon filling contracts and getting coal on hand down to a reasonable quantity. Country trade, which caused the slight flurry, was partly due to the snowy and rainy weather which swept over this country all week long, but many a sales manager ascribed it to a rush to cover by a good many small dealers who had actually believed there would be no strike.

WESTERN KENTUCKY

As a good many western Kentucky mines are not unionized, and one unionized section is under a no-strike contract with a year to run, it is believed that considerable tonnage will be produced. Some of the largest mines are operated on the open-shop basis, and the men are well satisfied. Production has been heavier as a result of a few rush orders.

Demand for screenings continues good, with supplies light. This condition is resulting in larger shipping of mine run. Many mines are running fuller than for months past, and are loading up sidings with production to move after April 1, if needed. Prices are weaker on lump, but screenings and mine run are stiffer.

ST. LOUIS

The quietest pre-strike period that St. Louis has ever experienced is that of the present. There is no domestic buying excepting in small quantities of cheap coal for temporary purposes. The domestic situation in the country is just about the same. Nobody is worrying. Providence seems to be on the side of the man with little money.

Some steam plants figure rather than spend money on storage of coal it will be more economical to suspend operations until coal gets cheaper. The past two months have been record breakers in the sales of smithing coal in St. Louis, which is recorded as being the heaviest smithing coal market in the country.

Retail prices are:

Carterville	$7.50@$8.00
Mt. Olive	6.50
Standard	5.75
Anth. stove	15.75
Anth. egg and grate	15.50
Anth. nut	16.00
Anth. pea	14.25
Smokeless	12.25
Byproduct coke	10.50
Gashouse coke	9.75

INDIANAPOLIS

Demand for steam coal continued strong in the final week preceding the strike. There was no lack of active supply and as a result there were no noticeable price changes recorded. Just what will happen after about a month of strike, is problematical.

Retailers are offering coal for lower prices than have prevailed for three years. Practically every retailer in Indianapolis has a stock on hand which is only limited by the capacity of his yard. Industrials have coal supplies to last from 60 to 90 days and some have sufficient reserves to hold out 120 days.

SOUTHERN ILLINOIS

There is no excitement, no speculation as to what coal is worth or will bring and there is the idleness that always prevailed previous to a strike in other years, at that time because of no equipment and now because of no business. Dissatisfaction is rampant among the miners. Over the field is an air of poverty. Nearly all the Carterville miners are in favor of a strike; a fight to the finish against a reduction.

Railroad tonnage has been good. The only commercial demand has been for screenings and some operations have been giving their lump coal away below cost to get screenings.

The Standard field is quiet. There is no demand for anything except a little screenings. Mines working on railroad tonnage have run full time.

It is estimated that on March 31 the unbilled tonnage aggregated between 2,500 and 3,000 cars, so that there will be no shortage of coal for some time to come in the St. Louis territory.

A forerunner of the things that are to be is noticeable in the tonnages produced by big companies who have perhaps exceeded all of their previous records during the past month, while hundreds of smaller mines are idle unable to compete in salesmanship, marketing problems and economical management.

LOUISVILLE

Jobbers are assuring their customers of their ability to supply fuel, if not from one group of mines then from another. Producers are anticipating that many non-union mines may go out at the start in sympathy, but that after a few days of idleness they will be glad to get back to work. A considerable tonnage is on cars at mines, waiting for orders. Much of this coal is lump, produced in an effort to supply screenings, and with the belief that it would sell in event of strike.

The coal trade takes the attitude that there could be no better time than now for a strike. "Let the miners get it out of their system," is the general feeling.

Northwest

Strike Worries Nobody Around Head of Lakes

Dock Stocks Look Good for at Least Three Months, Possibly Five—Eastern Coal May Come by Boat—Utilities Reassure Customers.

THE Northwest region has settled itself for the strike period. The docks are piled reasonably high with both soft coal for industry and anthracite for domestic use, so that not only the half-informed general public, but also the reasonably well-informed large coal buyers believe the region is good for at least three months and probably five. Some of the gas and electric-light and power companies are publicly assuring their industrial customers that service will be uninterrupted.

Dock men are eyeing their stocks with almost a paternal interest, however, and are not going after any new business. Plans are now being made, rather indefinitely, for distribution of dock stocks through the Dock Operators' Association of Minneapolis.

MINNEAPOLIS

The strike seems to have caused little worry in the Northwest. There has been some little preparation for trouble, however, as evidenced in the fact that coal shipments during March have gained considerably over a year ago.

It is quite possible that the strike may cause prices of coal in store to be worth more, but it will hardly result immediately. And since the docks are amply supplied, there is no reason for haste in laying in more than a moderate amount for early needs.

The Northwest is in the best condition of any portion of the coal-buying territory. There is in store on the docks from 60 to 90 days' supply, which period is assumed will be the fullest extent of the suspension.

Altogether, the Northwest feels little cause for apprehension now. Some public utility corporations have providently laid in an extra store. Some of the railroads have distributed fuel along their lines, in order to be on the safe side. But both moves seem to have been not quite necessary, though tending to assure against a stringency when stress sets in, if it does.

One lesson which has been learned, from past experience, is to guard against prophecy on the matter of the strike. For some years past, the trade has had the misfortune to predict shortages and scarcities of fuel, none of which developed. And coal buyers saw in the move nothing but an effort to urge people into buying coal through the threat of a shortage. So the present situation has been let severely alone.

The tonnage of coal handled in the Twin Cities by one of the leading roads during the first three weeks of March was more than double the same period of 1921, with 7,600 cars this year and 3,400 last year.

DULUTH

Despite the strike, coal buying at the Head-of-the-Lakes is absolutely at a standstill. Dock men claim this is fortunate for otherwise dock stocks would disappear too soon. Docks are not refusing orders. They simply are not looking for business, and are trying to conserve supplies. The coal situation is sized up by an authority, as not dangerous, but ticklish.

It is estimated that 3,000,000 tons of bituminous coal and 500,000 tons of anthracite will be on the docks when navigation opens about April 20. This should carry the trade for three months and if a little Eastern coal trickles in the Northwest should not feel the pinch of want for about four or five months.

Dock men are already talking of a regulation of shipments, and the possibility is that the Dock Operators' Association of Minneapolis will take charge of distribution. If this happens the industries and public utilities will be supplied first. Dock men hope that there will be no Government control of distribution as during the last strike.

Prices are firm all around with no showing of a change either way. Retail trade in Duluth and Superior, is reported as good, though the weather is milder.

MILWAUKEE

The coal market at Milwaukee is flat, and there is hardly any more animation at the docks than in summer. There is a dribbling movement outward by rail, and deliveries in the city are generally confined to small lots. Soft coal screenings are in some demand and little on hand. Screenings will probably continue scarce until navigation opens. Coke is being delivered a little more liberally of late. Prices of coal and coke have not undergone any change.

The Wisconsin Gas, and Wisconsin Electric Association, have issued a joint circular saying they have 60 to 90 days' supply on hand, and that factories and other industries using electric light, power or gas may count on uninterrupted service.

New England

Surfeit of Coal Makes Distress Prices Common

Market Less Active Than at Any Time Since Year Began—Textile Strike Spreads and Many Stock Piles Remain Stationary—No Railroad Fuel Orders in Sight.

APRIL 1 finds the coal market less active than at any time since the first of the year. The textile strike is spreading and many reserves are almost stationary. For Pennsylvania grades there is a most restricted territory and even at Hampton Roads there is only a moderate request. The market is so surfeited with coal that distress prices are now a common occurrence. The union mine suspension will be a check to the flow of coal which has been coming under forced draft to this territory.

The Maine Central has joined other New England roads in closing contracts. With these railroad orders disposed of there are in prospect no further requisitions of any size for engine fuel for several months to come.

Buyers are not at all impressed by strike talk. The market is less active than at any time since Jan. 1, and no recovery is in sight. The textile strike is spreading rather than otherwise and for a large number of plants coal reserves remain almost stationary and inquiry is of the most scattering character.

Receipts all-rail have been fair, but a large proportion of these were shipments on contracts that have now expired. The trade here is interested only mildly in efforts in the central Pennsylvania regions to make a vigorous contest with the mine-workers' unions, for neither by water nor rail is there expected much volume this year from districts that during the war period supplied a heavy tonnage.

For Hampton Roads coals there is only moderate request. A fair tonnage is coming forward, but most of this is either on contract or on old purchases. There has been inquiry here for Pool 3 slack for one of the large utilities, but there is enough competition for the order to drive prices down to levels that many operators will not consider. When offered for distribution Inland, Pocahontas and New River mine run meet with hard going; $6 flat, on cars Boston and Providence, has been quoted by factors with coal on their hands to force on the market.

The Maine Central has joined other New England roads in closing contracts for locomotive fuel. The Consolidation Coal Co. is rumored to have secured a fair amount of this tonnage, the remainder being placed with Boston factors, but the prices are not yet out.

At Philadelphia and New York piers there is hardly a wheel turning on bituminous, aside from certain contracts.

Eastern Inland

March Closes with Year's Biggest Output; Prices Sag

Railroads Continue Storing in Bad-Order Cars—Many Operations With Orders Filled Close Before April 1—Steel Trade Holds Encouragement.

MARCH closed with the highest production of the year. Railroads had generally filled their needs but continued to store coal in bad-order cars, while some last-minute stocking also was noted as the strike became a reality. The demand was not sufficient, however, to absorb all the coal offered, and prices continued to soften. Many operations were closed before April 1 where producers had cleaned up all their orders.

Apparently, it will be many weeks before consumer interest revives, because of the heavy stocks on hand and the slow rate of industrial consumption. The steel trade is showing encouraging activity, however, and production now is equal to the pre-war capacity rate. This improvement is sure to react on the coal trade.

CLEVELAND

No reaction to the strike situation has yet developed. Public utility companies and railroads were taking coal up to the day of the walkout, but industrial users were apathetic.

The steel mills are fairly well stocked, having about 48 days' supply. The remarkable expansion in steel activities, however, may be a factor making for greater consumption of fuel than had been anticipated. In Cleveland and in Youngstown the iron and steel industry is operating at over 70 per cent of capacity. This is at a rate that would have been full capacity before the war.

Lake vessels are being lined up. This indicates the feeling of shippers that the strike will not cut off the movement of Lake coal this spring. Tonnage for moving about 70,000 tons to Buffalo has been chartered, as protection against a coal shortage if the strike is protracted.

The greater portion of the coal arriving at Ohio Lake ports has been from the Pittsburgh district. For the season to the beginning of April the Lake boats took about 4,000 cars compared with dumpings of 6,046 cars for the corresponding period of one year ago.

Successive decreases during the past few weeks in the volume of bituminous coal arriving at Cleveland tends to corroborate the claim that users will enter the period of mining suspension with a good supply of fuel on hand. Receipts during week ended March 25 were only 1,302 cars, industry receiving 1,014 and retail yards 288. Total decreases under the preceding week amounted to 266 cars. This volume is at least 40 per cent under that of several weeks ago.

EASTERN OHIO

Operations were speeded up during the week ended March 25 to meet a general pre-strike demand for storage fuel. Production recorded a new high point for the year—453,000 tons or 73 per cent of capacity—and exceeded that of the previous week by 55,000 tons. Eastern Ohio is now approximately half a million tons ahead of the same period in 1921.

Reserve fuel programs of the various railroads were substantially completed some 10 days ago except that they have continued to load surplus "bad order" equipment, thus converting it into side-track storage facilities and enabling them to carry a maximum of fuel for the cessation period. However, the major portion of increased production went to industry.

With the large quantities of storage fuel on hand, no apprehension is being shown by consumers. There is also considerable expectation that stocks can be amplified if necessary from non-union mines, many of which maintain selling agents or connections in this market. Contrary to the usual course of spot prices when operations are augmented by reason of greater demand, a softening tendency prevailed during the week and most grades were selling off as compared with spot prices prevailing a week before.

The peak of production passed with the week of March 25 as many mines had already taken care of their trade in anticipation of the exigency and closed down several days prior to the end of the month.

PITTSBURGH

The coal market in general continued softening up to the last day before the strike date, not on account of available supplies increasing but on account of demand decreasing farther. Various mines on the fringe of the region here and there have been understood to be operating at rates below the union scale but continuance of operation at such mines is not counted upon for a certainty by any means.

As to the competing coals of the Connellsville region, Sewickley vein steam coal has continued to be offered at $1.25@$1.30 and perhaps in some instances less has been done, while Pittsburgh steam has been readily available from some sellers at $1.50, with one sale reported at $1.40. One large Connellsville interest has closed two mines in the past three weeks on account of lack of orders.

No important developments in the strike situation are expected for several weeks, the union mines simply remaining closed. Some strikes, technically "sympathetic" are expected in non-union regions.

The last regularly quotable market on Pittsburgh district coal was about as follows: Steam slack, $1.30@$1.50; gas slack, $1.50@$1.60; steam mine run, $1.80@$1.90; high grade gas, ¾-in., $2.60@$2.70; Panhandle 1¼-in. domestic lump, $2.75.

BUFFALO

Consumers are hard to interest, even in single-car orders. Some rumors of possible strikes at non-union mines are heard, but it is not believed that such an outcome is likely on any considerable scale. The outlook is not bright, but some shippers and dealers expect April business to show a slight gain over March.

It will apparently take many weeks before consumers will begin to show much renewed interest in coal. They are carrying from one to four months' stock already, and as they are using but little coal they see no adequate reason for buying more.

Slack, which was selling in better volume than other coal recently, is now little wanted, even at low prices. Quotations are about $2 for Youghiogheny gas lump, $2.35 for Pittsburgh and No. 8 steam lump, $2.10 for Allegheny Valley and other mine run and $1.60@$1.80 for slack.

NORTHERN PANHANDLE

The strike approach has not served to appreciably enhance the demand. There has been a little more railroad buying. Uncertainty prevails as to contracts, especially among companies operating union mines. Where mines are operated on a non-union basis, however, there is more activity.

COLUMBUS

Additional steam orders were received during the last week in March, but this had only a slight effect on market conditions as a whole. Buying on the part of railroads and public utilities was the best feature. Some buying on the part of general manufacturers was reported but this was not important. In fact, some distress coal sold at rather low levels.

Lump has been somewhat quiet. Screenings have been the strongest point in the market. This is due to a reduction in the production of lump and not so much to increased demand for the small sizes.

Production still ranged around 25@28 per cent. Some mines were closed before the end of the last week in March where producers had cleaned up their orders.

DETROIT

There is seemingly no increase in demand, due to the suspension of work by the miners. Most of the large steam consumers and all the public utilities in Detroit appear to have a comfortable supply in excess of current needs. The railroads are well supplied and most of the retail dealers have considerable quantities on hand.

The proximity of weather that will permit doing without heating service, is a factor in discouraging buying by householders except in instances where their supply has become exhausted.

Four-inch West Virginia lump is quoted $2.50, 2-in. lump, $2.25; egg, $2, mine run, $1.50, nut and slack, $1.30. Three-inch Ohio lump is $2.75, 1¼-in. lump, $2.50, egg, $2.25, mine run, $1.85, slack, $1.50. Smokeless lump and egg is $3.25, mine run, $2, slack, $1.50.

Cincinnati Gateway

Interest Veers from Strike To Freight Rate Changes

Spot Quotations Lack Strength But Market Has Steadied Somewhat—Loads at Portsmouth Normal—Retail Price Cutting Ceases—Lake Inquiries Slowest in Twenty Years.

IMPENDING changes in freight rates have actually overtopped interest in the strike. At any rate, no concern is shown over the possibility of a short supply, while on every hand the trade is awaiting some announcement of a readjustment of carriers' charges.

There is no strength to spot quotations, although the market has steadied from its precarious position of ten days ago. The accumulation of loads at Portsmouth has been reduced to normal.

Some tardy Lake business is appearing but buyers are not interested in anything but wide-open contracts, giving them the assurance of tonnage as they may need it. Not for twenty years have Lake inquiries been so delayed.

CINCINNATI

Some Lake business is beginning to show itself. Wide-open contracts are being suggested from the buyer's side, which means that only an assurance of coal is desired. The oddity of the market is that March slipped into April without a price being made for deliveries of coal for that month. This is a thing unheard of in this market in the past twenty years.

Smokeless business steadied itself after a slight decline and while $3 was asked for the better grades, that was top and not the rule. The bulk of the sales were made on the low figure for egg and lump. There was little demand for nut and mine run had a better tone to it. Slack held to the slight gain in favor shown the week before.

Inquiries and sales at Tidewater from the Logan County fields were the feature of the bituminous market. This was at a $1.50 mine run basis. Slack and mine run were quoted on a parity by both the West Virginia and the southeastern Kentucky mines. Gas producers were the heaviest takers of the spot coal that was bought.

Retail business showed great improvement. Householders and others were putting away coal and the brakes were placed upon price cutting by the threat of one of the older companies to sell for freight plus the cost of coal. The prices for April delivery are: Smokeless lump, $7.25@$7.75; mine run, $6.25@$6.75; bituminous lump, $6.50@$6.75; mine run, $5.50, and slack, $4.50.

HIGH-VOLATILE FIELDS

KANAWHA

Production continued to dwindle as March drew to a close. A few plants are being operated on an open-shop basis and therefore are in a position to continue mining. A poor demand and low prices make it impossible for the general run of owners to secure orders. The biggest drop in price has been on lump or block which is now selling below $2. Slack is somewhat scarce and little is to be had.

LOGAN AND THACKER

Largely because of contracts, Logan mines are working almost to capacity, production still averaging more than 50,000 tons a day. Spot orders are at extremely low prices, especially for prepared grades and mine run. Mines in this field will continue to operate and it is because of that fact that so much business has been attained.

Toward the end of March the output in the Williamson field declined to some extent. Curtailment of operations was not sufficient to force any mines to shut down, however. Production is affected to the extent of about 3 per cent by a shortage of cars. Prices are somewhat weaker due to the slackening demand.

NORTHEASTERN KENTUCKY

In common with other fields, the region experienced a drop in the demand. Production during the first two months of the year was just double that of the corresponding period of 1921. Companies are preparing for increased production during the strike and during the summer in general.

SOUTHEASTERN KENTUCKY

Demand for all grades has been on the decline until just before the strike, when it showed a good deal of recovery. All grades except block moved freely and prices were higher.

It is not known whether the operators who recently signed the Knoxville agreement for two more years work under the 1917 scale will be allowed to work or not, but the opinion is that they will not and that practically 100 per cent of the mines in Bell and Harlan counties will be down.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Despite a general slackening of demand and the downward trend of prices, New River mines were keeping up production during the latter part of March. There is so much coal in the market, however, that not all the tonnage produced is being readily absorbed, as a result of which coal has accumulated on sidings to some extent.

Shipments from the Gulf region to Tidewater were affected by a further extension of the strike among textile workers in New England. Manufacturing plants and public utilities are well provided with coal in storage. Although tonnage has steadily increased on the line of the Virginian, producers found no demand to amount to anything and do not anticipate much business for several weeks to come. Prices still show a downward trend.

POCAHONTAS AND TUG RIVER

During the latter part of the month there was a lessened demand for Pocahontas. In consequence there was a drop in production. With so much smokeless fuel on the market prices have declined. There was a little better movement to Tidewater and smokeless is by no means plentiful at the seaboard.

Tug River production was lower during the closing days of March than it had been for a month or more, dropping from 110,000 tons down to 87,700 as the market became surfeited. Prices have been an influence, all grades being on a lower level. Even with production somewhat curtailed, virtually all mines are in operation.

West

KANSAS CITY

Operators and consumers appear to have been quietly putting their affairs in shape for a healthy strike. The Kansas Industrial Court has announced that if the strike causes undue public inconvenience the operators must continue to pay the old scale until a settlement is made, with the Industrial court acting as intermediary. However, there is now a surplus at the mines sufficient to supply the trade for a week or ten days. Steam plants have stored enough for 60 to 90 days. It seems doubtful whether the public could suffer much inconvenience in the face of such stocks.

There are enough "no bills" at the mines right now to care for any reasonable demand so that mines could hardly operate now even if there were no strike on.

Prices, being at rock bottom, show no material change from last week.

SALT LAKE CITY

Retailers report a considerable falling off in the demand as a result of the spring-like weather. Perhaps the threatened strike has had the effect of making the demand a little more brisk than it would otherwise have been.

There is not much coal in the yards and if a general strike does not come there may be much suffering unless the weather keeps warm. Most of the big users are well stocked and there is not likely to be any interruption of industrial operations in any event.

DENVER

Acting Governor Colley petitioned officials of District 15, United Mine Workers, not to sanction any nation-wide movement for a strike, declaring that it "would add materially to the general unemployment and would fail because of the desperate financial condition of the men."

Wholesalers and operators have made little preparation for a strike of any duration, and consumers are little concerned about the possibility of a shortage of coal, which, in Colorado, would be in the lignite field if it came at all.

Prices show no fluctuations, and this is another indication of the public pulse.

News From the Coal Fields

CONNECTICUT

The Beach Lumber Co., Bristol, recently filed papers of incorporation, to engage in the lumber and coal business. The capital stock is listed at $50,000. Officers are: President and treasurer, Duane W. Beach; secretary, I. H. Johnson.

The Tuxis Coal Co., Meriden, is planning to commence work shortly on the construction of a reinforced-concrete and steel coal pocket, with a capacity of 2,000 tons. The pocket will have the latest coal handling equipment.

ILLINOIS

The shipping department of the **O'Gara Coal Co.**, has been located temporarily in the Big Four freight offices at Harrisburg. The main offices at Harrisburg were recently destroyed by fire.

A. P. Blackstead, formerly chief engineer of the Camden Iron Works (R. D. Wood Co.), Camden, N. J., and prior to that hydraulic engineer with the Henry R. Worthington Co., New York, has joined the engineering staff of the Dayton Dowd Co., Quincy, manufacturers of centrifugal pumps.

Eugene McAuliffe, of St. Louis, called on a number of his Chicago friends late in March.

Fifty-eight years in coal mines is some record, but that is the one claimed by **M. Prosser**, who works in one of the Mt. Olive mines. He came to Illinois in 1863 and has worked continually in the mines in this state for over 58 years, being everything from a miner to a mine manager and always an official in some capacity in the local union.

William J. Spencer, president of the Monmouth Coal Co. of Monmouth, was in Chicago late in March.

George, Albert and Frank Reisch, of Springfield, recently purchased the mine of the **Spring Creek Coal Co.**, near Springfield. The mine has maintained a good working average for the last two months and employs about 400 men.

More than 100 tons of coal burned with the coal chute of the Chicago, Milwaukee & St. Paul R.R. at Dixon a short while ago.

C. E. McLaughlin, recording secretary of the Illinois Coal Operators' Association, made a recent business trip to Chicago.

J. E. Hoey, well-known mining man of southern Illinois and a resident of Sesser, has just been appointed state mine inspector of Franklin County. He succeeds **John O'Rourke**, who resigned recently.

INDIANA

Hugh Jenks, president of the Producers Coal Co., who has been a victim of the "flu," has been taking the waters at French Lick. **Dan Pritchard**, Western manager of his father's company, the Virginia Fuel Co., also was at the springs.

Judge **A. B. Anderson** in the Federal Court at Indianapolis has released on their own recognizance twelve Indiana coal operators who are defendants in the case brought a year ago by the Government against 225 operators and miners on a charge of conspiracy to violate the Sherman anti-trust law. Those released from bond are the ones who had given surety bonds in the sum of $10,000. The action was said to have been taken merely to relieve the defendants from paying premiums on their bonds.

The Wallace Mining Co., at Huntingburg, filed papers with the secretary of state recently showing an increase in the number of its directors from three to seven.

KENTUCKY

A bill enacted recently by the Kentucky Legislature, and supposed to have been included in a final batch sent to the Governor for signing, is missing. This bill would have forced all coal operators and employers, who issue script, checks, etc., to employees, to redeem such "currency" for whoever held it, regardless of whether they were employees. In some mines it is contended that payment for labor is made in script, and that the commissary will not cash it for any other merchant, which enables such a commissary to control all of the business of its employees.

Trainmen, including engineers and others, of Boone County, W. Va., have just completed the organization of **The Coal River Collieries Co.**, with $2,000,000 capital, after purchasing the mining plant of **The Eureka-Elkhorn Coal Co.**, on Beaver Creek, and will start development of these properties at once. The company also acquired several thousand acres in Boone County, and will start development of these this year. Shipments will be made over the C. & O. from Beaver Creek. The main office will be in Cleveland.

The Louisville office of the **Consolidation Coal Co.**, of Chicago and St. Louis, has been closed and George E. Davis, who has been in charge, will be located at Roanoke, Va.

NEW YORK

For the year ended Dec. 31 last the **Clinchfield Coal Corporation** reports net earnings before fixed charges amounted to $120,923, leaving a net income after fixed charges of $877,725. Of this $43,544 was paid into a sinking fund to retire preferred stock, $94,252 was paid as preferred dividends. A total of $327,321 was paid on the common in the form of dividends and $139,681 set aside as a reserve for 1921 federal taxes, leaving a surplus for the year of $272,925.

The Orton & Steinbrenner Co., of Chicago and Huntington, had made arrangements with **J. Ross Bates** to represent them in the New England States and New York City. Mr. Bates has offices at 136 Liberty St., New York City and 128 School St., Watertown, Mass.

Howard W. Showalter, of the Diamond Coal Co., of Fairmont was in New York recently.

Sandvik Steel Inc., announces the consolidation of the general steel and steel belt conveyor departments, 233 Broadway, New York City; W. D. Thomas, president and general manager, Anders Johnson, vice-president, Garrick M. Spencer, secretary and Harry Carlson, sales manager.

Everett Drennen, of the West Virginia Coal & Coke Co., was a visitor in New York and other Eastern markets a short time ago.

A coal men's bowling tournament, with five teams contesting, has been concluded at Buffalo, after playing forty-six games. The team of Charles A. Switzgable won with thirty-one games. Numerous prizes are to be distributed.

W. L. Simpson, who has been in the coal trade for a number of years, and who has recently been the representative of Currie & Campbell, Philadelphia, has started the **Simpson Mining Co.**, with office at Rochester.

OHIO

W. R. Grant, of the Harlan Coal Co., High Splint, Ky., **J. B. White**, of the Cleveland Cliff Iron Co., **Roy Cunningham**, of the Twin States Fuel Co., Huntington, and **A. B. Rawn**, of the Solvay Collieries Co., were recent visitors to the Cincinati market.

John Bricker has been appointed receiver for the **Lakin-McDowell Coal Co.**, a wholesale concern which had its office in Columbus. The application was made by the **W. J. Hamilton Coal & Coke Co.**

The Crawford-Long Coal Co., Toronto, has been chartered with a capital of $100,000 to mine coal in the eastern Ohio field. Incorporators are O. Y. Crawford and W. M. Long.

Nearly two weeks after the fatal accident to the "Helper," harbor boat of the **Campbell Creek Coal Co.** in Cincinnati, it was located in the region of Fernbank dam. The body of Captain Burnside, manager of transportation for the company, had not been recovered and divers were being sent down in the hope of locating it.

Part of the contracts let by the Louisville & Nashville for its fuel supply went to **Burlingham Coal Co., the Blue Diamond Coal Sales Co., and the Southern Coal & Coke Co.** It was understood in Cincinnati that most of the bids went in around $2 but the awards were made on a $1.65@$1.75 range. The requirements called for a 6-in. mine run.

Sam Stephenson, who comes from a family long identified with coal, cement and furnace interests in the Jackson district, while in Cincinnati said that the cement business was beginning to boom and that from a coal man's viewpoint business from that angle should be brisk.

PENNSYLVANIA

Pittsburgh Coal Co. earnings for 1921 show net income after all charges, but before Federal tax, of $3,673,543, equal to $4.89 a share on $32,169,200 common after preferred dividends.

The Erie Steam Shovel Co. is the new name of the **Ball Engine Co.** The engine business having been sold, the entire manufacturing facilities are now being used for building steam shovels and cranes. There has been no change in management, personnel, etc.—the change is in name only, to provide a corporate title more in keeping with present activities.

C. C. Beury, of Charleston, president of the Beachwood Coal & Coke Co., of the Turkey Knob Coal Co., and other smokeless fuel concerns, is a patient at the Jefferson Hospital at Philadelphia where it will be necessary for him to remain for several weeks. Mr. Beury has been in very poor health recently.

The Workmen's Compensation Board has dismissed the appeal of Millie Zelazny, Chambersville, against the **Seneca Coal Mining Co.**, Chambersville. The opinion holds that there is no positive evidence that the husband of the claimant met with an accident as contemplated by the workmen's compensation act, nor that death followed as a result of the injuries sustained as evidenced by the wounds found on the decedent's body but that the circumstances, together with the medical testimony, are convincing that the decedent did meet with such an accident and that his death resulted from the injuries received.

The Gilmore Coal Mining Co., Allegheny County, has notified the State Department at Harrisburg that it has increased its indebtedness from nothing to $300,000. S. A. Gilmore is president.

Following the firing of two shots, in No. 4 breast, of No. 3 level, at the No. 11 colliery, of the **Lehigh Coal & Navigation Co.**, near Coaldale, Pa., two miners were instantly killed, and two others seriously, if not fatally, burned. The men who lost their lives and those who were injured were working in a breast, adjoining the one in which the blasts were fired. The accident occurred at an operation, located near Seek, between Tamaqua and Coaldale, and nearer the former place. In the gas explosion the other two men were injured.

J. C. Middour, a former state forester and service man, recently employed by the Richards Estate at Pottsville, has accepted a position with the P. & R. Coal & Iron Co., as an assistant forester with headquarters at Tremont. He will have charge of protection and forest utilization work in the vicinity of Tremont, and will conduct planting operations, make timber estimates and surveys, open trails and fire lanes as may be authorized.

During the first three months of 1922, members of the Workmen's Compensation Board wrote 176 opinions and decisions. During January, 70 opinions were filed at Harrisburg, in February, 65 were filed and in March, 41.

The State Supreme Court will hear argument in the **anthracite coal tax and the Fowler and the Kohler mine cave laws** in Philadelphia, April 17, according to notice furnished the Attorney General's Department at Harrisburg. The constitutionality of the coal tax law was attacked in the Dauphin County Court while the mine cave cases originated in Lackawanna County. The coal tax appeal will be argued for the State by Attorney General George E. Alter.

The breaker of the National colliery of the **Glen Alden Coal Co.**, in Scranton, is for sale "as is," the purchaser to dismantle and remove. The breaker has been idle since the cave at the National mine, Jan. 13. The attitude of the city officials is such that it seems unlikely the mine will resume work for some time, so it was decided to remove the breaker. When and if the mine itself goes into operation, the coal will be run through the Taylor breaker.

F. E. Zerbey, general manager of the **Kingston Coal Co.**, on behalf of that corporation, has decided to donate a double house in Courtdale to the Community Association, organized for that purpose, so that the citizens may have a community center. The property includes considerable ground, and the committee in charge is already arranging for a tennis court, several other play courts, and a swimming or wading pool big enough to accommodate all the youngsters who may care to come.

Appeals taken by the **Peoples Coal Co.**, of Scranton; **Frank P. Christian**, its president; **John G. Hayes**, general manager, and **James Pearn**, colliery engineer, joint defendants in a suit brought by the City of Scranton, involving surface support to a large area in West Scranton, have been dismissed by the Supreme Court in an opinion written by Justice Alexander Simpson, Jr. Fines totaling $250,642 imposed on the defendants, jointly and severally were sustained.

TEXAS

Permit to do business in Texas has been granted by the Secretary of State to the **Texas Bituminous Co.**, incorporated under the laws of West Virginia. Offices will be maintained at Dallas, with A. H. Johnson as state agent. The company will do a mining and wholesale coal business.

VIRGINIA

The only bid in the Norfolk market at present is for 12,000 tons asked by the **City of Norfolk.** The following bids have been listed: W. E. Deegans Coal Co., Huntington, W. Va., $1.63; Tildesley Coal Co., Charleston, W. Va., $1.73; Nottingham & Wrenn and Arundel Corporation, of Norfolk, $1.74 each; C. G. Blake, Crozer-Pocahontas Coal Co., Flat Top Fuel Co., Eastern Coal & Export Corporation, Smokeless Fuel Co., Johns Bros., all of Norfolk, $1.75; Hasler & Co., Norfolk, $1.80; Fayette Smokeless Coal Co., C. & O. Coal & Coke Co., Lake & Export Coal Co., and Dexter & Carpenter, of Norfolk, $2; Pocahontas Fuel Co., current market prices.

WASHINGTON

The coal fields around Cle Elum in the State of Washington have been producing more heavily during this spring than at any other time in seventeen years, according to R. B. Webb, coal agent for the Northern Pacific at that town. Commercial mines in the region have been finding a market for about all of their output. However, the production of the Cle Elum field for the year 1921 fell considerably short of that of 1920. The pick-up, now so noticeable, did not start in 1921 until September when some of the Cle Elum mines employed more men than they ever had before. **The Northwestern Improvement Co.'s** output for 1921 was 1,013,737 tons; that of the **Roslyn Fuel Co.** (which was closed down during the summer), 53,491 tons; the **Roslyn Cascade Coal Co.**, 103,207 tons, and the **Cle Elum Coal Co.**, 1,000 tons.

The Pacific Coast Coal Co. is steadily increasing its output. From a total of 11,876 tons for the week ended March 10, the total production jumped to 14,112 tons, an increase of 2,236 tons.

The Newaukum Coal Co. is developing a prospect on the north fork of the Newaukum River, fourteen miles from Chehalis. Operations are being conducted by T. R. Jones, M. A. Stewart and R. M. Shaver.

A coal vein is being developed on Coal Creek between the Leonard and the North Coast Power Co.'s properties on land owned by **Francis Donahoe** of Chehalis.

WEST VIRGINIA

The Consumers Fuel Co., operating at Randall in Monongalia County, is arranging to add additional equipment at its Eureka Mine. A cross-over dump is to be installed and the coal will pass through a dump hopper, a steel apron conveyor distributing coal to a four-track shaker screen. The present tipple will be enlarged and braced.

The Logan Island Creek Coal Co. has just awarded to the Fairmont Mining Machinery Co. a contract for the installation of a conveyor and a three-track shaker screen. The conveyor will be one of the longest one-piece scrapper conveyors ever installed and will be a part of the incline by which coal will be brought down the mountainside.

Through additional equipment to be installed at its plant at Jere on Scott's Run in the Monongalia field, the **Soper Mitchell Coal Co.** will be able to thoroughly prepare for market four-inch lump, two-inch egg and three-quarter slack at the rate of 350 tons an hour, which is about twice the present capacity.

Operations have been resumed at the Itman mines of the **Pocahontas Fuel Co.**, in the Wyoming field of southern West Virginia, where no coal has been mined during the last year. The mines began producing coal again on April 1. The fact that they are once again in operation is considered significant as showing that the company expects a marked increase in demand in the near future.

J. C. Green, of the Greenmar Coal Co., with headquarters at Buckhannon, was called to Elkins on March 21 by the death of his father.

After spending the greater part of the winter in Florida, **John A. Clark**, head of the Clark interests in the Fairmont region, has returned to his office there.

C. A. Clyborne, formerly Eastern sales manager for the Kentenia Coal Co., has become associated with The Three States Coal Co., as president. Offices are in Bluefield.

Officers and directors were elected at the recent annual meeting of the **Wysong-McCoy Coal & Land Co.**, composed largely of Bluefield capitalists, held in Princeton. The directors chosen are: Dr. E. F. Peters, A. F. Wysong, John K. McCoy, W. J. Elliott, John H. Reynolds, Cary C. Hines, Samuel J. Evans, W. H. Foster, Hartley Sanders, J. H. Gadd and George W. Lazenby. The board elected the following officers: A. F. Wysong, president; John K. McCoy, first vice-president; Samuel J. Evans, second vice-president; W. J. Elliott, secretary and treasurer. This company has purchased 10,000 acres of coal land in Webster County in which there are seven seams of coal.

Out of a total of 64 companies chartered in West Virginia in the month of February, eight of them, or one-eighth of the entire number, were coal concerns whose capital aggregated $7,425,000. The largest of these was the **Logan County Coal Corporation**, in which the Jones interests of Logan are largely represented. This company was organized and chartered with a capital stock of $6,000,000.

The Blocky Pittsburg Coal Co. has been organized and incorporated with a capital stock of $100,000, preliminary to the development of about 200 acres of Pittsburgh coal land, there being acquired along with this acreage a mine already opened and equipment which will make it possible to produce coal at the rate of 1,500 tons a day. This mine is near Clarksburg, and is so situated that its product can be shipped over the Baltimore & Ohio. Officers have been elected as follows: Stephen F. Elkins, of Morgantown, president; C. H. Wilson, of Fairchance, Pa., treasurer; Herbert F. Harker, of Morgantown, secretary. The above officers, together with W. J. Walker, of Uniontown, and Paul Talbott of Fairmont, W. Va., were the incorporators. The mine will be under the general direction of E. H. Reppert, of Morgantown, general superintendent.

About 4,000 coal cars are to be built for the Norfolk & Western for use on its lines in West Virginia, according to announcement made a few days ago at the general offices of the company in Roanoke. Authority to secure the additional equipment was granted at a meeting of the board of directors held in Philadelphia on March 22. The new equipment will consist of steel hoppers having a capacity of 70 tons. One company will build two thousand of the cars, another company 1,000 and still another company 1000.

The Kentucky and West Virginia Power Co. has materially added to its equipment through the installation of an 11,000 kw. turbine and transformers of equal capacity, and has the new machinery in commission. Work on the installation of the new equipment was completed on March 20 at which time it was cut in, giving the company much more power which will be utilized in West Virginia and Kentucky where new transmission lines are being built. The company finds it necessary to increase its available power in order to take care of the rapid development of the mines in Kentucky and West Virginia.

WISCONSIN

Coal men of the Duluth-Superior region met in Superior, recently, where a banquet was held. The speakers of the evening were **F. G. Hartwell**, Chicago, president of the Berwind Fuel Co., who talked on general business conditions in the country; **E. E. Heiner**, Minneapolis, vice-president of the Superior Coal & Dock Co., who also discussed the business outlook, and **J. L. McMahon**, Milwaukee, of the Northern Coal & Dock Co., delivered a talk on Americanism. Other speakers were **H. E. Smith**, St. Paul, vice-president of the M. A. Hanna Coal & Dock Co., and **G. G. Watts**, Minneapolis, general manager of the Great Lakes Coal & Dock Co.

The Valley Coal Co., a subsidiary of the Lehigh Coal & Navigation Co., is now firmly established at Milwaukee, and contemplates making improvements on its newly acquired dock on the Menomonee River.

The Reiss Coal Co., of Sheboygan, has contracted for a 5,000-ton steel steamer, which will be equipped with a self-unloading apparatus. This method of handling coal over the docks seems to be becoming popular, as it avoids the need of costly hoisting machinery.

BRITISH COLUMBIA

Coal lands situated in the Copper River District are to be subjected to systematic exploration by the **National Finance Co., Ltd.**, who is acting as liquidator of the Yorkshire & Canadian Trust, Ltd. This announcement was made recently in the course of an application before the Supreme Court of the Province for permission to proceed with diamond drilling. Activity in the development of coal areas of northern British Columbia has become marked in the past two years, chiefly for the reason that with the growth of Prince Rupert, and of settlements along the line of the Grand Trunk Pacific Ry., the local domestic market has materially expanded.

Problems connected with the coal mining industry of Vancouver Island, such as the affect of fuel oil competition, the possibility of popularizing pulverized coal, and the utility of improved methods of flotation of coal were discussed at a recent meeting of the **Vancouver Island Division of the Canadian Institute of Mining & Metallurgy**, held at Ladysmith. Thos. A. Spruston, superintendent of the Wellington-Extension Colliery of the Canadian Collieries (D) Ltd., presided and among those who gave addresses were Colonel J. E. Leckie, Dean Brock, Dr. Hanson, H. Mortimer Lamb, N. Thompson, and E. A. Haggen.

Recent developments in the industry of Vancouver Island are encouraging. New deposits have been opened up in the Reserve Mine, **Western Fuel Corporation of Canada**, and the Farm Mine, Comox, **Canadian Collieries (D) Ltd.** The collieries have been working steadily and the output is being well maintained. It is not anticipated that the mines of the island will be affected by the strike, the wages being regulated still by the Dominion Fair Wage Officers.

NOVA SCOTIA

The United Mine Workers' Executive Board, after a two-day meeting, decided in favor of the "strike on the job" advocated by Secretary-Treasurer, J. B. McLachlan. Eighteen men who loaded only half a day's normal stint had their places stopped. They were given work in a portion of the mine being worked double shift but only three accepted. **The British Empire Steel Corporation**, having 180,000 tons of stored coal is likely to close down the mines. However, most of the men are not "soldiering" on the job and unusually large tonnages are being produced despite the fact that the "flu" has weakened many of the men materially.

ONTARIO

In connection with the forthcoming coal strike in the United States it is recalled by the trade in Canada that during the crisis of 1919 Canada got quite liberal treatment from the United States, largely as a result of the efforts of Fuel Controller McGrath, who was successful in making representations to Washington officials that resulted in coal being diverted to Canadian consumers. There are complaints now that too liberal treatment was given Canada and that this must not be repeated in case of a coal shortage in the United States. In view of past experience it is apparent that measures may have to be taken by the Dominion Government to secure an adequate amount of coal for essential purposes in the event of a protracted deadlock. There is in stock at

Fort William 178,000 tons of bituminous and 70,000 tons of Pocahontas, in private hands mostly. This will be out of reach of central Ontario consumers. The C. P. R. is understood to have reserves amounting to 260,000 tons at Fort William, sufficient to carry the railway through almost any emergency. The Canadian National roads are not as well supplied, but they can secure additional quantities without much trouble. Toronto industries have a soft-coal reserve which will carry them over six weeks and the impression prevails that as a result of the strike hard coal will be cheaper.

WASHINGTON, D. C.

The uncertainty of the oil supply and the use of coal by oil companies and railroads was referred to in testimony before the House Appropriations Committee by Colonel J. W. Wadsworth, superintendent of the National Homes for Disabled Volunteer Soldiers, located in various parts of the country. He quoted Mr. Hurley of the Santa Fe to the effect that if Mr. Hurley could get coal at Leavenworth, Kan., he would burn it on every engine on that road. Representatives of the Sinclair Oil Co., and the Standard Oil Co., had advised the authorities of the homes against the use of oil for heating because changes in the process of refining had cut out by-products of fuel oil in the Middle West except as to smaller concerns. It was testified that the Standard Oil Co. refineries at Sugar Creek used coal as fuel. The oil men were quoted as saying there were no dependable sources for oil, as the large concerns were not producing fuel oil, and there was no certainty that the oil market would be stabilized in the Middle West.

The increasing use of the Ohio and Monongahela rivers for coal traffic was referred to by General Taylor of the Corps of Engineers, in recent testimony before the House Appropriations Committee. He stated that practically all coal used in Pittsburgh comes down the Monongahela, the commerce last year on the river amounting to 22,000,000 tons.

Representative Newton, of Minnesota, author of the proposed coal regulation bill, based on the original Calder bill, is seeking to have the House Committee on Interstate Commerce consider the measure. While this and other coal bills pending before the committee have been placed among the more important bills for consideration, the committee has not yet taken up the bill. At a recent meeting the committee rejected a motion of Mr. Newton, who is a member, to take up his coal bill, but instead took up three railroad bills amending the Transportation Act, on which hearings are now being held.

The Government coal washery in Alaska has been completed. Work is to begin at once so as to provide a considerable tonnage of coal which is to be used by naval vessels in the most thorough test to which Alaska coals ever have been subjected.

Association Activities

Hazard Coal Operators' Association

A meeting of the association was held in Cincinnati, March 28, with E. L. Douglass presiding. It was the regular monthly meeting but with numerous matters affecting the policy of the operators in meeting contingencies that would arise through a coal strike the most of the session was given over to this. Consideration was also given to a report from the traffic commissioner of the association, regarding changes which were being considered by the Louisville & Nashville on through rates all-rail, for coal being sent to the Northwest.

Traffic News

The I. C. C. has canceled the hearing in the complaint of the **Northwestern Pennsylvania Coal Operators' Association** assigned for April 26, at Pittsburgh.

In the complaint of the **Dyer Packing Co.**, an examiner of the commission recommends that the rate of 70c. a ton on coal from a mine near Bruceville, Ind., to Vincennes, from June 25, 1918, to Feb. 29, 1920, was unreasonable because it exceeded 45c.

In the complaint of **J. E. Isgregg and Clifford Connerly** an examiner recommends that the rates on bituminous coal from Jackson Hill mine in the Clinton, Ind., coal district to the railroad's team track at Clinton during Federal control were unreasonable.

The rate on bulk coke from Tupelo, Miss., to Atlanta, Ga., is unreasonable, according to a recommendation of an examiner in the complaint of the **Pratt Engineering & Machine Co.**

The petition of the **Northern Illinois Coal Operators' Association,** in the matter of intrastate rates in Illinois, has been assigned for hearing by the I. C. C. May 1, at Chicago.

The Northwestern Traffic Service Bureau has withdrawn its complaint involving rates on coal from Wood River, Ill., to Akron, Ohio. **The Proctor & Gamble Mfg. Co.,** has also withdrawn its complaint involving rates on coal from Mount Olive and Staunton, Ill., to Kansas City, Kan.

The commission has further suspended until May 4, proposed rates on coal from Illinois mines to points in Arkansas, Louisiana and Texas. Rates on coal from Wyoming mines to destinations in Utah south of Ogden have also been further suspended until May 4.

The Colony Coal Co., of Denver, has complained against unreasonable rates on coal from Dines, Wyo., to Seattle, South Omaha, Lincoln and Huntsman, Nebr., Lusk, Wyo., Oral, S. D., and points in Oregon, Washington, Idaho, California, Wyoming, Colorado, Nebraska, Kansas and Iowa.

Considerable dissatisfaction having been manifested against the rates on bituminous coal in the Western part of the United States, the Interstate Commerce Commission has concluded to institute an investigation into all such rates from producing points in Montana, Wyoming, Colorado, New Mexico and all states west thereof to destinations in those states and to El Paso, Tex. The general purpose of the investigation is to develop facts which will aid the commission in determining what would be the proper adjustment of rates on coal in the territory described, both with respect to the level of the interstate rates and the relationships as between the various producing mines or groups of mines. Hearings will be held during May at representative points, including Denver, May 10; Salt Lake City, May 15; Butte, Mont., May 19; Seattle, May 22; San Francisco, May 26; Phoenix, Ariz., June 5; and El Paso, June 7. Parties desiring to be present and offer evidence at any of the above-mentioned points should promptly advise the commission and the respondent carriers interested of the particular matters and rates which they desire to have considered. So far as practicable, it is desired that rates to points in Colorado be considered at the hearing at Denver, to points in Utah at Salt Lake City, etc.

In the complaint of the **Omaha Lumber Co.,** an examiner recommends that the rates on certain shipments of anthracite from Anthracite, Horace, and Crested Butte, Col., to Omaha, South Omaha, and Fremont, Neb., and on bituminous coal from Somerset, Col., to Kiron, Ia., were not unreasonable, but that two shipments from Anthracite to Omaha were overcharges, and the rate on one shipment from Crested Butte to Council Bluffs was unreasonable.

The complaint of the **Melcroft Coal Co.** will be heard at Pittsburgh, April 25.

The complaint of the **Walter Wallingford Coal Co.** will be heard at Pittsburgh, April 20.

Hearing in the complaint of the **Republic Coal Co.,** assigned for Minneapolis, April 20, has been canceled.

Coming Meetings

Southeastern Coal Merchants' Association will hold its first annual meeting on April 10 and 11 at Atlanta, Ga. Secretary, M. E. Patterson, Candler Building, Atlanta.

National Retail Coal Merchants' Association. Fifth annual convention at the Drake Hotel, Chicago, Ill., May 18-20. Executive secretary, Joseph E. O'Toole, South Penn Square, Philadelphia, Pa.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 28 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave, Chicago, Ill.

Colorado and New Mexico Coal Operators' Association. Annual meeting June 21 at Denver, Col. Secretary, F. O. Sandstrom, Boston Building, Denver, Col.

Missouri Retail Coal Merchants Association will hold its annual meeting May 16 and 17 at the Planters Hotel, St. Louis, Mo. Secretary, F. A. Parker, Arcade Bldg., St. Louis, Mo.

American Institute of Electrical Engineers will hold its spring convention at Chicago, Ill., April 19-21. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

National Coal Association will hold its annual meeting at Congress Hall, Chicago, May 24 to 25. Committee on arrangements, Harry N. Taylor, chairman, Dr. F. C. Honnold and Walter Cunningham.

Virginia Coal Operators' Association will hold its annual meeting April 15 at Norton, Va. Secretary G. D. Kilgore, Norton, Va.

The fourteenth annual meeting of the **International Railway Fuel Association** will be held in the Auditorium Hotel, Chicago, Ill., May 22 to 25.

Society of Industrial Engineers will hold its national spring convention at the Hotel Statler, Detroit, Mich., April 26-28.

National Association of Purchasing Agents will hold its seventh annual convention at Exposition Park, Rochester, N. Y., May 13-20. Secretary, S. C. McLeod, 130 W. 42nd St., New York City.

National Foreign Trade Council will hold its annual meeting May 10-12 at Philadelphia, Pa.

Mining Society of Nova Scotia will hold its annual meeting May 15, at Sydney, N. S., Canada. Secretary, E. C. Hanrahan, Sydney, N. S.

American Society for Testing Materials will hold its twenty-fifth annual meeting June 26 to July 1, 1922, at Atlantic City, N. J., with headquarters at the Chalfonte-Haddon Hall Hotel. Assistant treasurer, J. K. Rittenhouse, Engineers' Club Bldg., Philadelphia, Pa.

The twenty-seventh annual convention of the **Illinois and Wisconsin Retail Coal Dealers' Association** will be held at the Hotel Highland, Delavan Lake, Delavan, Wis., June 13, 14, 15. Secretary I. L. Runyan, Chicago, Ill.

American Society of Mechanical Engineers will hold its annual meeting May 8 to 10 at Atlanta, Ga. Secretary, C. W. Rice, 29 West 39th St., New York City.

Chicago Coal Merchants' Association will hold its annual meeting April 11 at Chicago, Ill. Secretary, N. H. Kendall, Plymouth Building, Chicago, Ill.

Indiana Retail Coal Merchants' Association will hold its annual meeting April 26 and 27 at the Severin Hotel, Indianapolis, Ind. Secretary, R. R. Yeagley, Fidelity Trust Bldg., Indianapolis, Ind.

The Canadian Retail Coal Association is holding its annual meeting on April 6 and 7 at the King Edward Hotel, Toronto.

The annual convention of the **Pennsylvania Retail Coal Merchants' Association** will be held at the Stacy-Trent Hotel, Trenton, N. J., June 7 and 8.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

Obituary

James J. Bucklin, well-known coal operator of Brazil, Ind., died at the home of his son, H. E. Bucklin, of Indianapolis, Ind. He was treasurer of the Crawford Coal Co.

Willis Glover Townes, vice-president of Archibald McNeil & Sons Coal Co., Inc., of New York, died recently at Palm Beach, where he had been spending the past few weeks. Mr. Townes was well known to the coal trade and at one time was chairman of the financial committee of the National Democratic Executive Committee. He was a member of several clubs.

Henry Alexander Laughlin, a director of the Jones & Laughlin Steel Co., died on March 21, at his home, Greylock, in Chestnut Hill, Philadelphia. He was the son of James Laughlin, founder of the steel company. Mr. Laughlin was one of the first to recognize the value of the coal deposits on the Monogahela River and foresaw the advantages to be derived from them by Pittsburgh.